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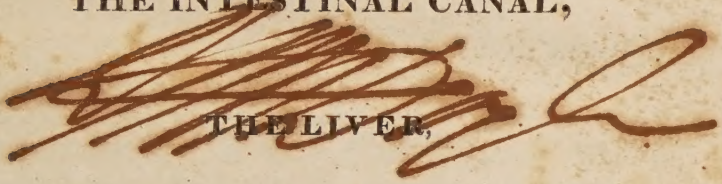

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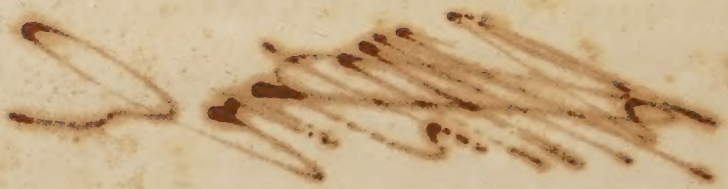

PREFACE.

NOTHING appears to have had greater influence in retarding the progress of knowledge, than misconception in regard to the proper objects of scientific inquiry. It was in this manner that so much talent was wasted and lost in former times, when learned and able men devoted their attention to searching after the hidden causes of events; and the great purpose of the illustrious fathers of modern science was accomplished, by bringing back the attention of inquirers to objects which are within the reach of the human faculties. We often talk of the philosophy of Bacon, without fully recognising the important truth, that the philosophy of Bacon and of Newton consists entirely, to use the words of an eminent writer, in "ascertaining the universality of a fact."

This cannot be better illustrated than by a reference to that department of science, in which

the philosophy of modern times is so distinguished above the conjectures of former ages. The theory of gravitation, even extended as it has been to the great phenomena of the universe, is nothing more than the universality of a fact. Of the cause of that fact we know nothing, and all the investigations of Newton were carried on independently of any attempt to discover it. "When Newton (says Mr. Stewart) shewed that the same law of gravity extends to the celestial spaces, and that the power by which the moon and planets are retained in their orbits, is precisely similar in its effects to that which is manifested in the fall of a stone,—he left the efficient cause of gravity as much in the dark as ever, and only generalized still farther the conclusions of his predecessors."

If medicine is ever to attain a place among the inductive sciences, its first great step towards this distinction will be made, when medical inquirers agree to restrict their investigations to ascertaining the universality of a fact. By adhering to this rule, we shall avoid two errors, which will probably be admitted to have been frequent in medical reasonings, and to have had no inconsiderable influence in retarding the progress of medical science. The one is the construction of hypothetical theories, or the assumption of principles which are altogether gratuitous and imaginary; the other is the deduction of general principles or

conclusions from a limited number of facts. Doctrines of the former class may be considered as almost independent of observation; and those of the latter kind, though they have an apparent foundation of facts, are framed without due inquiry whether these facts are universal. The confidence is indeed remarkable with which general statements of this last description are often brought forward, and the facility with which they are received, without due examination, as established principles. We even find some writers expressing such confidence in these deductions, as to talk of general rules in medicine, with exceptions to these rules; and in this manner, new observations, by which the rules might be corrected, are overlooked or forgotten. Such a phraseology, indeed, must probably be considered as at variance with the principles of sound investigation. We are in the habit of talking of general rules in grammar, and exceptions to these rules, because we know the precise extent to which the rules apply, and the exact number of instances which form the exception; but, in physical science, to speak of exceptions to a general rule cannot be regarded in any other light, than as an admission that the rule is not general, and consequently is unworthy of confidence.

The best means of avoiding the errors which have now been referred to, will probably be, to keep in mind the important principle, that the object of physical science is "to ascertain the uni-

versality of a fact." A considerable number of medical doctrines, there is reason to apprehend, will come out of the examination in rather an unsatisfactory manner, if we apply to them the tests which this rule would furnish, namely,—are they facts, and are these facts universal?

The object which the author has proposed to himself in all his medical researches has been, to furnish facts in a concise and accessible form, and to advance to conclusions by the first step of the most cautious induction. If, in following out this course of investigation, he has sometimes had occasion to call in question doctrines which have been generally received, he has only to appeal to the principles which have now been stated. To opinions which have been received by others, he would never presume to oppose mere opinions of his own; but he cannot hesitate to submit both to the test of observations, which are calculated to ascertain, whether they are facts, and whether the facts are universal.

He is deeply sensible of the favourable manner in which the profession have received his Researches on the Pathology of the Brain. The volume which he now presents to them is intended to answer a similar purpose, namely, to furnish them with a connected series of authentic facts, from which he is anxious that they should draw their own conclusions. Those which he draws from them he will keep entirely distinct from the facts on which they are founded; and, with regard

to all his conclusions, his only anxiety is, that they should be tried in the most rigid manner, both by the facts themselves, and by farther observations on the same subjects.

This volume is divided into five parts, in reference to the five organs to which it relates, namely, the STOMACH, the INTESTINAL CANAL, the LIVER, the SPLEEN, and the PANCREAS. The two former are treated of at some length, with a view both to pathology and practice; and the three latter are considered with a more immediate reference to their pathological changes.

Edinburgh, October, 1828.

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PATHOLOGY

OF

THE STOMACH

AND

INTESTINAL CANAL.

VIEW OF THE STRUCTURES CONCERNED IN THIS INQUIRY, AND THE PRINCIPAL MORBID CONDITIONS TO WHICH THEY ARE LIABLE.

In entering upon the pathology of the stomach and intestinal canal, it will be advisable first to take a general view of the various structures which enter into the formation of these organs, and of the principal morbid conditions to which they are liable. The structures are chiefly three; namely, the peritoneal, the muscular, and the mucous coats of the canal.

1. The Peritoneum is a serous membrane, which is constantly carrying on the function of exhaling and reabsorbing a serous fluid. It is liable to inflammation, both acute and chronic, and to various remarkable changes of structure, some of which are evidently the result of inflammation, while others seem to have a different origin. The first effect of a certain low degree of inflammatory action upon serous membranes, appears to be simply an increased deposition of the serous fluid;

and, in this manner it is probable, that a certain state of these membranes, which, if not actually inflammatory, closely borders upon it, is sometimes relieved; the increased quantity of fluid being afterwards absorbed, and the parts thus recovering their healthy relations. But, in different states of the disease, we find remarkable varieties in the characters of the fluid which is deposited: in one case, it is simply opaque and milky,—in another, it contains shreds of flocculent matter,—in a third, it has all the sensible properties of pus. All these varieties of the effused fluid are sometimes found without any remarkable change in the membrane itself; but, in general, it has undergone some considerable deviation from the healthy structure. These deviations are chiefly two. The first is a slightly softened and thickened state of the membrane, giving it somewhat the appearance of a part which has been boiled. This, I think is commonly connected with the opaque milky deposition. The second and the more common appearance consists in the surface being covered by a coating of false membrane. This may be connected with the milky flocculent fluid, or with fluid which has all the sensible qualities of pus, or with a fluid which is entirely limpid. In the latter case, the deposition on the surface of the membrane will prevent the re-absorption of the fluid, so that the accumulation which might otherwise have disappeared will thus become a permanent dropsy of the cavity,—provided the disease has not existed in such a form as to be speedily fatal. This state of parts is often seen most remarkably in the cavity of the pleura, the cavity being full of a limpid fluid, while it is lined by a complete and uniform cyst of false membrane. We are entirely unacquainted with the causes which regulate these varieties in the deposition from inflamed serous membranes. Under the influence of inflammation, also, whether acute or chronic, serous membranes are liable to form adhesions betwixt their opposite sur-

faces, and this may consist of simple adhesion with very little appearance of any interposed substance; or there may be an interposition of false membrane, which is often of very considerable thickness.

In their structure, serous membranes are liable chiefly to three morbid conditions.

1. Simple thickening. This is seen most strikingly in the peritoneum; which is sometimes found thickened in a most remarkable degree; and it appears to be the result of inflammation which has gone on in a chronic form.

2. Tubercular disease,—the whole surface of the membrane being found studded with innumerable tubercles generally of a very small size, and of a firm consistence. They appear to be covered by cysts, and present the same characters with tubercles in other parts of the body.

3. There is another affection, often met with in the peritoneum, which appears to be in its nature quite distinct from tubercular disease. It consists in the surface of the membrane being covered by nodules of various shapes and sizes,—of a semi-pellucid character and smooth rounded surface. The masses of this substance are sometimes of great size, and a large extent of the peritoneum may be found covered by them. This is the disease described by Dr. Baron, and supposed by him to be of the nature of hydatids. On first inspection it has a resemblance to hydatids; but in the specimens which I have had an opportunity of examining, it appeared to be of an entirely different nature. The nodules were of a uniform firm gelatinous consistence, or sometimes more dense at the centre than at the circumference. They did not appear to be covered by any cyst, and they were entirely soluble in boiling water.

II. The second structure is the Muscular Coat. It completely invests the whole extent of the canal; and

the healthy function of the parts depends upon this muscular covering performing at all times its healthy and regular action. We know little of the diseases of muscular fibre, except in as far as relates to derangement of its functions. In a muscular covering which invests a cavity, the principal deviations from the healthy state appear to be the following.

1. A morbidly increased but uniform and harmonious action. This appears to arise chiefly from causes of irritation applied to the internal surface of such cavities. In this manner we see vomiting produced by various irritations applied to the stomach, and diarrhœa by similar causes applied to the intestinal surface. A similar effect seems to arise from a morbid irritability of the surface itself, provided it be uniform over a considerable extent of the membrane; the ordinary stimuli producing in this case the same effect that the irritating causes do in the other.

2. A morbidly increased but partial and irregular action. This appears to arise chiefly from morbid irritability of small portions of the internal surface; the ordinary stimuli producing, at these parts, a morbidly increased action, with which the other parts do not harmonize. This appears to be the state which is often expressed by the indefinite term, spasm. It is seen in the urethra, and the œsophagus, in the affection which is called spasmodic stricture; and a similar condition appears to occur in the bowels, particularly in certain states of dysentery, in which we find morbid discharges from the lower part of the canal, with retention of the natural feces in the parts above.

3. Diminution or loss of muscular power. In a muscular covering investing a cavity, this appears to arise from two causes; namely, over distention and inflammation. The former we see distinctly take place in the bladder, and there is reason to believe that something similar occurs in the bowels in certain states of

Ileus. Inflammation seems also to destroy the action of muscular fibre. Thus, intestine which has been highly inflamed is generally found in a state of great distention, showing the complete loss of its healthy muscular action; and, if the disease has gone on until the intestine has either become ruptured, or has given way by ulceration, it is found to have fallen together like an empty bag, without any appearance of muscular contraction; whereas, healthy intestine, when it is empty, contracts uniformly into a round cord. In regard to the immediate effects of inflammation upon muscular fibre, there is considerable obscurity; but, one point may be considered as known and established, which is of considerable importance for our future inquiries, namely, that a result of inflammation in muscular fibre, is gangrene. When, therefore, we find gangrene in the intestinal canal, we have reason in general to conclude that inflammation has existed in the muscular coat; for we shall afterwards find grounds for believing, that it may exist in each of the coats separately without affecting the others, but giving rise to most important diversities in the symptoms.

4. Thickening of the muscular coat has also been described by some of the French writers, particularly as occurring in the stomach. It constitutes an affection to which they have given the name of Hypertrophia of the stomach; though some of them appear to apply this term to a general thickening of all the coats.

III. The third structure to which our researches will refer, is the Mucous Membrane. This lines the whole course of the intestinal canal from the pharynx to the rectum. In the structure and functions of this membrane, we have to keep in view the following circumstances.

1. The whole surface of the membrane is constantly secreting a mucous fluid, which is transparent, glutinous, and is said to have slightly acid properties. It appears

to be formed in large quantity ; according to Haller, to the extent of eight pounds in twenty-four hours. When an animal has fasted for a considerable time, this fluid has been supposed to undergo digestion, forming chyme and excrementitious matter ; and, in this way, some have explained the appearance of excrementitious matter in tedious fevers, and other protracted diseases, in which the patient has taken little or no nourishment.

2. Besides this general secretion from the whole mucous surface, there is a distinct formation, from numerous follicles or simple glands, of a liquid which has been called the follicular fluid. These follicles exist in great numbers along the whole course of the intestinal membrane, though they are more numerous at some parts than at others. The peculiar properties of the follicular fluid have not been ascertained ; but, it is considered as certain, that it is distinct from the general mucous secretion,—because, in observations upon living animals, the latter may be seen to be produced from portions of the membrane, where no follicles appear to exist. The mucous and follicular fluids of the stomach, mixed with similar fluids from the œsophagus, and with saliva, are considered as forming the gastric juice.

3. There is likewise from the whole mucous surface, a serous exhalation, similar in its properties, as far as is known, to the exhalation from serous membranes.

4. The intestinal mucous membrane is also to be considered as an absorbing surface ;—numerous absorbents opening from every part of it, and conveying the absorbed fluids towards the thoracic duct. These are most numerous in the small intestines.

We are to attend to various forms of disease in mucous membranes connected with these peculiarities of structure. These are chiefly the following.

1. Inflammation and its consequences. This appears to exist in mucous membranes in various forms, or rath-

or various degrees, but we are ignorant of the causes which regulate these varieties. The effect of the first or lowest degree of inflammation on a mucous membrane, appears to be simply an increase of its proper secretion, more or less changed in its qualities from the healthy condition. This we see most familiarly in the nose and in the bronchial membrane. In another state of inflammation, we find the formation of aphthous crusts, and in a third the deposition of false membrane. This last we see most remarkably in the bronchial membrane; it is also met with, though more rarely, in the mucous membrane of the intestine. In a more advanced stage, inflammation of the mucous intestinal membrane terminates by ramollissement, or an ash-coloured pulpy degeneration of portions of the membrane; these fall out and leave spaces, which are apt to pass into ulceration. A considerable extent of the membrane is also occasionally found in a state of uniform dark softening, resembling gangrene. Adhesion of the opposite surfaces of the mucous membrane of the intestine is sometimes met with, producing complete obliteration of the canal; but this is very rare. A case has been related to me, in which it was found to have taken place in the parts included in a hernia. Inflammation of mucous membranes exists in a more chronic form, in which it goes on for a long period, and is chiefly distinguished by increased and morbid secretion from the parts. In its progress in these cases, the membrane is apt to become thickened and even indurated, so as considerably to diminish the capacity of the cavity. In this manner is formed stricture of the urethra, and similar diminution of the area of the intestinal canal. The diseased surface in those cases is frequently found covered with fungous elevations; and these frequently alternate with portions of the membrane in a state of ulceration. The French writers have started a controversy, whether the change of structure in these cases be in the mucous

membrane itself, or in the subjacent cellular texture. It is a point which it must be next to impossible to decide, and of no practical importance.

2. Diseases of the follicles, or simple glands of the membrane. This subject is involved in much obscurity, but seems to promise some interesting results. The follicles appear to be liable to a vesicular or pustular disease, which passes into small defined distinct ulcers, quite unconnected with any disease of the mucous surface.

3. Disease of a tubercular character is often met with on the mucous membranes. It is probably seated in the follicular or glandular structure, and is most commonly met with in some particular situations, as the cardia, pylorus, and the extremity of the rectum, in which situations it often assumes a scirrhous character.

4. Diseases of the parts concerned in the absorption of the alimentary matter, so that, though elaborated in the usual manner, it passes off without entering the circulation. The cause of this, most familiar to us, is disease of the glands of the mesentery; but the same effect appears to result from certain conditions of the surface of the mucous membrane itself.

This slight outline of the various morbid conditions, to be considered in regard to the intestinal canal, will serve to show the importance of the subject; and the extent of it will farther appear, when we recollect, that the various diseases are also greatly modified by their seat,—as being in the stomach, the small intestine, or the colon and rectum. Of a subject so extensive, it is but a very imperfect view that can be given in such an essay as the present; but I am anxious that what is given, may be correct and authentic, as far as it goes, and that it may be of some use in directing the researches of those who have opportunities of prosecuting the investigation.

PATHOLOGY

OF

THE STOMACH.

THERE are few points in medical science which have undergone more discussion than affections of the stomach : and yet, it must be confessed, that when we come to investigate the subject, according to the rules of pathological induction, we find little that is satisfactory. This has in part arisen from numerous difficulties which attend the investigation. Many of the affections of the stomach, though productive of much and protracted discomfort, are not apt to be fatal ; and thus few opportunities occur of investigating their pathology, except when the patient dies of another disease. The great proportion of these seem also to be entirely of a functional nature, leaving no morbid appearance that can be discovered after the death of the patient ; and, in others, the appearances are of so doubtful a kind, that they do not afford sufficient ground for any precise principle in pathology. In a practical point of view, also, this is perhaps more encumbered with uncertainty than almost any other department of medical practice ;

for the diseases are so much under the influence of moral and other adventitious causes, that the action of remedies is aided, modified, or counteracted, in a manner which entirely eludes our observation, and is often altogether beyond our control. From these various causes, diseases of the stomach have presented a wide field for speculation, conjecture, and empiricism; a vague and indefinite phraseology has often been allowed to take the place of principles; and the whole subject is removed in some measure out of the usual limits of pathological inquiry. Amid this uncertainty we must endeavour to discover what is the pathological truth; and, should this prove to be more limited than a slight view of the subject might lead us to expect, something will at least be done by ascertaining its extent, and tracing the course by which it may be enlarged.

I shall consider affections of the stomach under three classes:

I. Affections of an inflammatory kind, including ulceration and its consequences.

II. Affections which more properly come under the class of organic.

III. Functional affections,—embracing a slight outline of the subject of dyspepsia.

In an appendix, I shall briefly allude to the affections of the œsophagus—and the duodenum—and to derangement of the functions of the stomach by tumours attached to it externally.

SECTION I.

OF THE INFLAMMATORY AFFECTIONS OF THE STOMACH AND ULCERATION.

Acute gastritis is a disease described by all systematic writers, but in the records of pathology it is very difficult to find a pure example of it in an idiopathic form. I have been often very much astonished to find, in my own observation, how seldom the stomach shows marks of inflammation, even when the organs most nearly connected with it have been inflamed in the highest degree. In cases of very extensive peritonitis, the peritoneal coat of the stomach is sometimes affected; but even this is rare, and a case of pure inflammation of the peritoneal coat of the stomach I have never seen, and do not find described by any writer. Dr. Armstrong, in the first fasciculus of his work on the morbid anatomy of the stomach and bowels, gives a plate representing inflammatory deposition on the peritoneal coat of the stomach; but no account is given of the case from which it was taken, so that it does not appear whether it was an example of pure idiopathic gastritis or whether the appearance occurred in connection with extensive peritonitis.

The disease which we call gastritis is to be considered, therefore, as seated chiefly or entirely in the mucous membrane, and even here it is extremely rare as an acute and idiopathic disease. It is from the action of the acrid poisons that we chiefly find inflammation of the mucous coat of the stomach, but we cannot consider these cases as necessarily exhibiting the same symp-

toms which would accompany the disease in its idiopathic form. The symptoms which are usually described as those of gastritis are pain and tenderness in the region of the stomach, with urgent vomiting and fever; but, in as far as we have facts on which we can proceed with confidence, it does not appear that the symptoms are so uniform as systematic writers would lead us to believe. A man mentioned by Haller, having swallowed a large quantity of very cold water when he was much heated was seized with acute pain in the stomach and fever, and died delirious in fifteen days,—no other symptoms being mentioned. The stomach was found to contain a fetid ichorous matter; and the fundus of it was inflamed with gangrenous spots and ulcerations. In another case, by the same writer, which was complicated with disease of the lungs, the chief symptoms were, pain and oppression of the breast, with perpetual hiccup and difficult deglutition. The stomach is said to have been every where inflamed, with effusion of blood into its cellular texture. In a case by Morgagni, the principal symptoms were anxiety and sense of fulness in the stomach, with frequent vomiting of a brown matter, in which were floating shreds of the membranous appearance; and these symptoms were followed by hiccup, delirium and convulsion. A young man mentioned by Storck complained chiefly of a burning uneasiness in the abdomen, with hiccup and intense thirst; and a man mentioned by Lieutaud had intense fever and violent pain in the stomach, with urgent vomiting, distention of the epigastrium and difficult breathing. In these and other cases of the same kind, however, it is merely stated in very general terms that the stomach showed marks of inflammation,—except in Haller's case, in which ulceration is mentioned; and the cases described by Broussais appear to be equally unsatisfactory.

On the other hand, we find De Haen, Stohl and Frank describing cases of what they term inflammation and gangrene of the stomach, in which none of the usual symptoms of gastritis had occurred; and other cases which had exhibited all the symptoms of gastritis, while no appearance of inflammation could be discovered on dissection. The last mentioned writer farther admits, that symptoms, closely resembling those ascribed to gastritis, frequently subside under treatment the very reverse of that which would have been applicable to inflammation. To these circumstances we have to add the important facts ascertained by Dr. Yelloly and others. In numerous cases of persons who died of other diseases, without any symptoms in the stomach, and in the bodies of criminals who had been executed, they have pointed out appearances which might have been considered as distinctly indicating inflammation of the mucous membrane of the stomach.

The older writers appear to have been very indefinite in regard to the use of the term inflammation; and it will now probably be admitted, that it ought not to be applied to any appearances consisting of mere change of colour or increased vascularity, without some decided change in the structure of the part, or some of the actual results of inflammation; and, upon the whole view of the subject, the conclusion seems to be, that we are still very much in the dark in regard to idiopathic acute gastritis. For my own part, I have never seen a case which I could consider as being of this nature; and I am disposed to regard as points not yet ascertained, what are the characters exhibited by the mucous membrane of the stomach in the earlier periods of acute gastritis, and in what they differ from appearances which may exist without any symptoms of gastric disease, or take place after death. If we might proceed in any degree upon the analogy of the corresponding affection in the mucous membrane of the bowels, I should be in-

clined to suppose, that the disease exists under two forms ;—that in the one, it is seated chiefly in the follicles or simple glands, in the other, in the mucous membrane itself ;—that, in the former case, it would consist, in its early stage, of detached and minute pustules or vesicles, and would terminate at an early period in minute and detached ulcers ;—and that, in the other, it would exhibit in its first stage, the appearance of defined portions of the mucous membrane of a red or livid-brown colour, and sensibly elevated above the level of the surrounding parts,—these portions afterwards terminating by softening or ulceration, or passing into a chronic state of disease with ulceration, thickening, or fungoid elevations upon the diseased parts. This is in some measure conjectural, but I think we may safely assert, that, in this investigation, nothing can be founded upon a mere general or extensive redness of the membrane, discoloration or increased vascularity,—whether more or less extensive,—venous turgescence, extravasation of blood into the cellular texture, or upon any appearance which consists of mere change of colour, without any decided change in the structure of the part. In a case mentioned by Mr. Annesley, in his late work on the diseases of India, which was fatal in seven days, the mucous membrane of the stomach was found covered with small defined ulcers, discharging a thin sanious fluid. The symptoms were incessant vomiting and hiccup, with fever of a tertian type, without any complaint of pain. In another case, by the same writer, there was at first acute pain in the stomach, increased by pressure, with very slight fever, and no vomiting. On the fourth day vomiting began, and he died on the seventh. The coats of the stomach in this case appeared to be thickened, but its internal surface was only deeply injected.

I leave this part of the subject, merely pointing it out for farther investigation, and proceed to another of much

practical importance, in regard to which we have numerous interesting facts on which we can proceed with confidence. We have every reason to believe, that the mucous membrane of the stomach is liable to inflammation in a chronic form, which often advances so slowly and insidiously, that the dangerous nature of it may be overlooked, until it has passed into ulceration, or has even assumed the characters of organic and hopeless disease. Farther, we shall find, that even ulceration may exist in the stomach without producing any symptoms of an alarming nature, until it gives rise to an attack which is very speedily fatal. In the early stages of this affection, the prominent symptoms are often such as merely indicate derangement of the functions of the stomach, and are apt to be included under the general term dyspepsia. The patient perhaps complains of extreme acidity, eructations, flatulence, and oppression of the stomach after eating. There is generally some degree of pain in the region of the stomach, but it varies very much both in its degree and its duration. In many cases, it is complained of only after eating, continues in considerable severity while the process of digestion is going on, and subsides when that process is completed. The appetite is often unimpaired, but the patient is afraid of taking food on account of the uneasiness which is produced by it, and he is entirely free from complaint when the stomach is empty. A frequent expression of such patients is, "I should be quite well, if I could do without eating." In other cases, there is more permanent uneasiness, which is aggravated by taking food; and sometimes there is pain in the back at the part corresponding to the seat of the stomach. In other cases, again, there is no actual pain, but the uneasiness is described as a feeling of heat, or a great degree of pyrosis. Vomiting is apt to occur, but in the early stages is only occasional, and is ascribed to some error in diet, or other accidental cause.

Afterwards it becomes more frequent, but still without that regularity which would seem to indicate serious disease; by attention to diet it may be, in a great measure, prevented, and in this manner the disease may go on for months without exciting alarm. The vomiting then, perhaps, becomes more frequent, and the uneasiness in the stomach more permanent, until the patient either sinks by gradual wasting, or is suddenly cut off by one of those rapid attacks to be afterwards particularly described. In all the forms of this insidious disease, there is great diversity in the symptoms. In some cases, there is little or no vomiting, the prominent symptoms being pain excited by taking food, with gradual wasting, and, as the disease advances, a feeling as if the stomach were incapable of holding any thing beyond the smallest possible quantity. In other cases, there is chiefly a constant and most painful feeling of pyrosis, with gradual emaciation; but, in many, it will be found that little or no uneasiness had ever been complained of, until the attack takes place which is fatal in a few hours. An important circumstance, therefore, in the history of this affection, is, that it may run its course almost to the last period without vomiting, and with scarcely any symptom except the uneasiness which is produced by eating, and which subsides entirely in a few hours after a meal. This most interesting modification of the disease will be strikingly illustrated by Case IV.

In some cases, again, the prominent symptom is a very copious discharge from the stomach of a clear glairy fluid like the white of eggs. In a woman, mentioned by Andral, this discharge amounted to about four pints in twenty-four hours; and she never vomited either food or drink. Sometimes this discharge is streaked with a black matter, or is entirely of the colour of chocolate, and not unfrequently is mixed with grumous blood.

The disease which is going on during the course of symptoms now described, consists of chronic inflammation of the mucous membrane of the stomach, which in many cases appears to commence in a very small and circumscribed portion. Its progress seems to be very slow, and, it is probable that it may continue for a considerable time and then subside, and occur again after various intervals, until at last it produces more permanent and extensive disease, by thickening of the parietes of the stomach, adhesion to the neighbouring parts and ulceration. The result which we have occasion to attend to most frequently as the immediate cause of urgent symptoms, is ulceration of the inner surface of the stomach; and we shall find that it exists in various forms, the most important of which, in a practical point of view, are the following :—

1. A small defined ulcer of limited extent, with evident loss of substance, and rounded and elevated edges, varying in extent from the size of a split pea to that of a shilling. We may find only one such ulcer, every other part of the stomach being in the most healthy state ; or we may find that there has been a succession of them, some of them cicatrizing, and others appearing, while the health of the patient gradually sunk under the disease, which after all may be found to have been of no great extent. In the cases of this first class, there is no general disease of the coats of the stomach, the ulcer being confined entirely to the mucous membrane, or perhaps to the follicles.

2. Ulcers like the former, of small extent, perhaps the size of a shilling, but complicated with thickening and induration of the parietes of the stomach, perhaps to the extent of a crown-piece or more around the ulcer, all the rest of the stomach being perfectly healthy.

3. Extensive irregular ulceration of the inner surface of the stomach, generally complicated with thickening and induration of the coats, and fungoid elevations.

In some cases there is no actual ulceration,—the prominent morbid appearance being a thickened state of the mucous membrane to a greater or less extent. The thickened portion in this case may be of a pale ash colour, or of a brown colour, or of a dark colour with the characters of melanosis; and these appearances may be farther complicated with thickening and induration of all the coats of the stomach at the part affected, and perhaps adhesion to some of the neighbouring organs. In other cases again portions of the mucous membrane have been found softened or entirely destroyed.

In the progress and terminations of this disease, there is considerable variety: the most important modifications in a practical point of view may be thus stated.

1. The disease may be fatal by gradual exhaustion after protracted suffering. In these cases we find either a succession of small ulcers which have been spreading from one place to another, or more extensive irregular ulceration with thickening of the coats, and probably adhesion to some of the neighbouring parts; and this is frequently complicated with disease of other organs, as the liver, the pancreas, or the omentum. In some cases of this class we find the thickened and fungoid disease of the mucous membrane, or thickening and induration of a defined portion of the parietes of the stomach without actual ulceration.

2. It may be fatal by hæmorrhage from the ulcer, assuming at first the characters of the simple hæmatemesis, but resisting every attempt to check it, or to prevent its recurrence, until the patient sinks under it within various periods—from a few hours to several days.

3. It may be fatal by perforating the stomach,—the contents thus escaping into the peritoneal cavity, and

giving rise to extensive peritonitis, which is fatal in a period of from eighteen to thirty-six hours. In cases of this class we find on inspection two important modifications of the morbid appearances. In the one, the simple ulceration seems to have advanced gradually through the coats, without any other disease, until the complete perforation took place. In the other, there is much thickening at the part, the ulcer seems to have perforated the thickened substance, and to have cicatrized at the edges, leaving a round defined cavity with smooth sides and edges, and the bottom of it formed merely by the peritoneal covering of the part. From the smooth appearance of the edges of the cavity which is formed in these cases, it is evident that the disease must have been of long standing; and the fatal event seems to take place by the slender peritoneal covering of the part suddenly giving way. This remarkable modification of the disease will be illustrated by Cases IX. and X. The same symptoms arise from a similar affection occurring in the duodenum.

A singular variety in the appearances is to be referred to before leaving this part of the subject. Though a complete perforation of the stomach by ulceration may have taken place, it is frequently found that an adhesion had been formed to some of the neighbouring parts, most commonly the liver, in such a manner that a portion of the surface of the liver supplies the place of the portion of the stomach that has been destroyed, and thus no escape of the contents takes place. This remarkable circumstance will be found exemplified in Case VIII. which was afterwards fatal by a small perforation immediately adjoining the portion where this adhesion had been formed. Another important modification arises from adhesion of the stomach to the arch of the colon, and a communication being formed between them by the ulceration. This will be found illustrated, with very remarkable symptoms in Case XI. In these examples of adhe-

sion of the stomach to the neighbouring parts, it will often be found that it has taken place to various organs, and perhaps also to the parietes of the abdomen,—showing that inflammatory action had existed in the coats of the stomach at various places and probably at different times, until one of the attacks had terminated in the fatal ulceration. This had probably occurred in Cases III. and VI. In other cases, again, we find a dense and thick mass of a tubercular character deposited betwixt the adhering surfaces, as was very remarkable in Case XI.

The principal modifications of this important class of diseases will be illustrated by the following selection of cases. In the arrangement of them I shall not study minute pathological accuracy, which is in fact unattainable; but shall describe them in the manner which seems best calculated for practical utility.

§ I. Succession of small ulcers of the mucous membrane of the stomach, fatal by gradual exhaustion.

Case I.—A gentleman, aged 50, had been many years in the West Indies, where he had enjoyed good health; but, after his return to Scotland, he began to have various dyspeptic complaints, which were generally ascribed to the liver. These complaints began about two years before his death, but never assumed any serious aspect till the winter 1823-4, when he was confined to the house, and his general health became considerably broken. He now complained of pain in the region of the stomach, which was not constant, but occurred at irregular intervals, and was sometimes dull and sometimes acute.

He had vomiting, which generally occurred every day, and frequently several times in a day. Articles of food or drink which he took were sometimes vomited almost immediately, and sometimes retained for several hours. His appetite was greatly impaired, and his strength was much reduced, but without emaciation. The pulse and other functions were natural. In the beginning of the winter he suffered severely from the violence of the pain; towards the spring it became much less acute, and the vomiting was less frequent; but he continued without appetite, and progressively losing strength.

I saw him along with Mr. Joseph Bell in the beginning of June, 1824. He then complained chiefly of total want of appetite, and dull uneasiness across the region of the stomach; but there was much less acute pain than he had formerly suffered; the vomiting also had much subsided. His look was dull and languid; his countenance extremely pale, but not emaciated; strength very much reduced; pulse a little frequent and weak; bowels natural. No other symptom could be discovered, and no organic disease could be detected on the most careful examination. He died about a week after this, without any change in the symptoms, except that for a day or two before death he was a little incoherent and slightly lethargic.

Inspection.—The stomach was large and distended with air, but externally healthy. On laying it open, there were observed about the middle of the small curvature two or three small round ulcers, not more than an eighth of an inch in diameter, with inflamed margins, but without any appearance of thickening of the parts. Higher up towards the cardia, there were numerous white or ash-coloured spots, of various sizes, like the marks of small-pox. They were much smoother than the surrounding membrane, and of a much lighter colour; and there was every reason for considering them as the cicatrices of small ulcers. They were numerous

all along the cardiac portion of the stomach, but were all smooth and cicatrized, except the two or three spots with inflamed edges already mentioned, which were in a state of actual ulceration. The disease seemed to be entirely seated in the inner membrane, without any thickening of the coats, and there was no other appearance of disease in any part of the stomach. The liver seemed smaller than natural, but was quite healthy. The pancreas appeared firmer than usual, but not remarkably so, and was not enlarged. The spleen and all the other viscera were perfectly healthy. The apex of the heart adhered to the pericardium at a space about an inch in length and a quarter of an inch in breadth. The adhesion seemed of very old standing, and there was no other appearance of disease in the thorax. The brain was entirely healthy.

In this very remarkable case, the disease appeared to be seated entirely in the mucous follicles. Among the various interesting facts which it presents, we may particularly remark, the activity of the symptoms in the early stages, probably while the follicles were in a state of inflammation,—and the obscurity of them when the disease was more advanced; likewise the proofs that many of the follicles had been in a state of ulceration, and had cicatrized; while, at the time of the patient's death, not above two or three of them were in a state of ulceration.

§ II. Circumscribed ulceration with thickening, fatal by gradual exhaustion.

Case II.—A woman, aged 45, had long complained of her stomach, but without any uniformity in the symptoms. She had occasional pain, with sense of oppression at the stomach; her appetite was variable, and

she sometimes vomited, but at long and irregular intervals. For some months she had been sensibly falling off in flesh, but the affection did not assume any more decided character, till about two months before her death, when she began to have more frequent vomiting, with diarrhœa, and constant uneasiness in the abdomen. She was first seen by Dr. Begbie, about a fortnight after the commencement of these symptoms, when she complained of fixed pain across the region of the stomach, where a considerable hardness was felt. She was much wasted,—had a small quick pulse, and frequent vomiting ; and, without any other change in the symptons, she died exhausted in about six weeks.

Inspection.—In the small curvature of the stomach, the coats were thickened and indurated, so as to form a hard mass about three inches long and two broad, and about three-fourths of an inch in thickness at the thickest part. When cut through, this portion presented a uniform white structure of almost cartilaginous hardness, except the internal surface of it, which was in a state of white, soft, fungous ulceration. The stomach was in other respects entirely healthy. The mucous membrane of the intestines presented many spots, which were of a dark red colour and highly vascular, but without any change of structure.

Case III.—A lady aged 50, had been for many years affected with dyspeptic complaints, and about eight years before her death, was first attacked with copious discharge of dark grumous blood both from the stomach and bowels. She soon recovered from this, and enjoyed tolerable health, though with constant dyspeptic symptoms, until 1826 ; she then had much pain in the stomach, constant feeling of acidity, and frequent vomiting of tough ropy mucous of a brown colour. She recovered from this attack after three or four months, but the stomach continued to be easily disor-

dered; she was liable to vomiting of sour matter, and there was occasional discharge of grumous blood both by vomiting and by stool. Soon after this, she began to have pain on pressure in the region of the stomach, and a broad flat tumour was felt in the left side of the epigastric region. Repeated topical bleeding was now employed, and the tumour subsided in a most remarkable degree; but, from this time, she continued liable to pain and distention of the stomach and bowels, and vomiting of acid matter; and occasionally she vomited considerable quantities of the tough brown mucous; she was now much reduced in flesh and strength, but for the last six or eight weeks of her life, a remarkable change took place in the symptoms. There was little or no uneasiness in the epigastric region, even on very firm pressure, and scarcely any remains of the tumour could be perceived. Her food was relished and retained, and the bowels were natural; but she became progressively more and more emaciated, without suffering, and died in April, 1828.

Inspection.—The stomach was drawn up into the left hypochondriac region, and adhered in several places by loose membranous bands to the parietes of the abdomen, to the spleen, and to the left lobe of the liver. The spleen was not above one-sixth of its usual size. The stomach when laid open presented a circular ulcer more than two inches in diameter, on the part which was contiguous to the pancreas. The surface of the ulcer was rough, with several indurations like small glands. The pancreas was enlarged, and felt throughout of scirrhous hardness. Opposite to, and connected with, the ulcerated part of the stomach, the blood vessels of the omentum were very numerous, turgid and more matted together than usual; and this appearance occupied the space where the tumour had been felt in the course of the disease. The coats of the stomach were considerably thickened at the place of the ulce-

ration, and for a small space around it ; the other parts of it were healthy.

These cases will serve to illustrate some of the varieties and the changes of symptoms which occur in this formidable disease, and the insidious manner in which it is apt to advance with symptoms which are liable to be considered as merely dyspeptic. Other remarkable varieties occur both in the symptoms and in the morbid appearances, of which it is impossible to give any general statement. A woman mentioned by Chardel had dyspeptic complaints, with pain in the stomach and back, and occasional vomiting. Solids only were vomited, and by great attention to diet, she suffered little inconvenience for several months. The vomiting then became more frequent ; at length it occurred daily, and several times in the day. She then wasted, and died gradually exhausted, about eight months from the commencement of the disease, and between two or three months from the time when the daily vomiting began. The stomach was found adhering to the liver, the spleen, and the pancreas ; along the great arch it was considerably thickened, and internally ulcerated and beset with granulations ; there was ulceration also about the cardia. A man mentioned by the same writer had for five months vomiting after meals, and died by gradual wasting, without any other symptom : nothing could be felt in the region of the stomach on the most careful examination. After death, the stomach was found adhering intimately to the concave surface of the liver ; and an ulcer at this place had perforated the stomach, and penetrated a considerable way into the substance of the liver ; there was also ulceration in the neighbourhood of the cardia. A man mentioned by Pinel had great acidity of the stomach, and other dyspeptic symptoms, with occasional attacks of acute pain ;—afterwards vomiting and gradual wasting ; and a tumour

was felt in the epigastric region. The pain became more acute, the smallest quantity of food producing great uneasiness, and he died exhausted after six months. The omentum was found hard, red and fleshy, and gathered up into a mass under the great arch of the stomach. The mucous membrane of the stomach was much destroyed, and there was an ulcer three inches in length near the pylorus.

A different course of symptoms occurs in a case related by Frank. A man aged 50, was seized, after violent exertion, with copious vomiting of blood, followed by discharge of blood by stool: these symptoms continued several weeks, and then ceased. He then had dyspeptic symptoms, with debility and emaciation; his appetite was good; but he had great uneasiness after eating; and some tenderness was felt in the right hypochondrium, with difficulty of lying on the right side. He became gradually more and more emaciated, and had some vomiting and dropsical symptoms before death,—his illness having continued seven or eight months. On inspection, the liver was found pale, hard, and much diminished in size, and the small curvature of the stomach was adhering to it. At the place of the adhesion, there was a very large ulcer which perforated the stomach, and penetrated into the substance of the liver.

§ III.—Extensive ulceration, with thickening, complicated with remarkable disease of the omentum and peritoneum;—fatal by gradual exhaustion.

Case IV.—A gentleman, aged 53, consulted me in autumn 1825, on account of pain in the region of the

stomach, which attacked him only after dinner. It usually continued an hour or two, and frequently extended considerably upwards along the thorax on both sides. He was cupped in the epigastric region, was put upon a carefully regulated diet, with the use of the oxide of bismuth ; and, after a short time, he got into very good health, and so continued through the following winter. In summer 1826, he frequently complained of his stomach, without any regularity in the symptoms ; but, in the following winter, the affection returned with the same violence as before. He was quite well during the earlier part of the day, no uneasiness taking place after breakfast ; but immediately after dinner the pain began, and continued in great severity for about two hours ; it then remitted, and in the evening he was again free from complaint, and had good nights. Sometimes the pain came on during dinner in such violence as obliged him to leave the table suddenly, and at last he was obliged to give up taking a regular dinner, and confine himself to small quantities of arrow root.

After a variety of treatment in the country, he came to Edinburgh in the beginning of June, 1827. He had then his usual look of good health, but the pain continued undiminished, so that he could only take the mildest kinds of food, and in very small quantity, without severe suffering for some time after. No organic disease could be discovered, and no particular tenderness in the epigastric region. He had never had any vomiting ; his pulse was natural ; and his bowels, though rather slow, were easily regulated. After the usual treatment for a day or two, he left town on particular business, with the promise of returning in a very few days ; but he did not return for a fortnight, when it was found that ascites had taken place to a considerable extent, with some anasarca of the limbs. He now began to decline rapidly in flesh and strength, and refused almost every kind of nourishment. He did not complain so much

as formerly of acute pain, but had a feeling of intolerable distention after taking even the smallest quantity of food. He said that he felt as if there was no room for any thing in his stomach, and that the smallest quantity distended it in an intolerable manner. A variety of treatment was now employed without relief, and he died about the 25th of July. For some weeks before his death, a small tubercular mass was felt in the abdomen a little way to the right of the umbilicus. There was no other appearance of organic disease. His pulse had continued calm and regular to the last. He vomited a few times, but to no extent, and his bowels were easily regulated through the whole course of the disease.

Inspection.—There was a considerable quantity of fluid in the abdomen. The Peritoneum lining the cavity was through its whole extent remarkably thickened, very firm, and uniformly covered with small miliary tubercles ; and the same appearance extended along the lower surface of the diaphragm. The stomach was remarkably contracted, and its coats were much thickened and indurated, and on its internal surface there was an ulcer the size of a half-crown. On its external surface, but not corresponding with the seat of the ulcer, there was a mass of irregular fungous disease of a tubercular character. The omentum presented a large mass of a tubercular structure, of nearly cartilaginous hardness, about four inches in extent, and in some places about an inch in thickness. The right extremity of this mass had formed an adhesion to the parietes of the abdomen, and it was at this spot that the hardness had been felt for a few weeks before death. The diseased omentum also adhered so intimately to the contracted and thickened stomach, that they seemed to be blended into one mass. It also adhered to the arch of the colon, but this was not otherwise diseased. The duodenum from its very commencement was entirely healthy ; but among the other small

intestines there were some slight adhesions. The liver was rather pale, and seemed diminished in size, but upon the whole was very slightly diseased.

I have been particular in the description of this case, because it would be difficult to find one calculated to show in a more striking manner the insidious nature of this affection, and the extent of disease which may be going on with such symptoms only as, up to a very advanced period, might have been considered merely indicating a high degree of dyspepsia. The important characters of the case in this respect are, the intermitting nature of the pain,—the absence of vomiting,—and the general appearance of health continuing unimpaired until a very few weeks before death.

This very interesting variety of the disease is farther illustrated by many cases which are on record. A man mentioned by Chardel had dyspepsia and acute pain after eating, which subsided after the process of digestion was completed. By restricting himself to very mild food in small quantities he felt little uneasiness; but after some time, without any change in the symptoms, he lost strength so much that he was confined to bed. His appetite continued, but he was afraid to satisfy it; he had very little nausea, and did not vomit above two or three times during his illness, which continued many months. On inspection there were found thickening of the coats of the stomach at the upper part, without ulceration, and enlargement of the lymphatic glands in the neighbourhood of the stomach. A man mentioned by the same writer had pain in the right hypochondrium and loss of appetite, with great acidity and gradual wasting. He had no vomiting, but a good deal of diarrhœa, the stools at last having become black and bloody, and he died gradually exhausted after a year. The stomach was found adhering both to the diaphragm and the colon. At the place of adhesion to the diaphragm,

a portion of the stomach was entirely destroyed by ulceration, and, by means of the adhesion, a portion of the diaphragm supplied the place of the part that was destroyed. A woman mentioned by Pinel had laborious digestion, pain in the stomach after eating, and gradual wasting. She had nausea, but seldom vomited, and died after several months; for a short time before death the vomiting had become rather more frequent. The stomach adhered to the liver and the pancreas; the mucous membrane was irregularly destroyed and ulcerated; and at the place of adhesion to the liver the parietes were perforated by the ulceration. The pyloric extremity was considerably thickened, and the omentum was thickened and indurated.

§ IV.—Ulcer of the stomach fatal by hæmorrhage.

Case V.—A gentleman, aged about 40, had been long dyspeptic, and liable to pain in his stomach, which had not assumed any fixed or regular character; but he required great care in respect of his diet, and many articles were apt to disagree with him. He was otherwise in good health, and applying himself actively to business till Saturday, 5th November, 1825, when he was suddenly seized in his counting-house with a feeling of extreme faintness. He was assisted with difficulty to his dwelling-house, which was in the neighbourhood, and soon after vomited a large quantity of black fluid resembling ink. On Sunday he continued very sick and faint, and vomited occasionally the same kind of fluid, and he had discharges of similar matter from the bowels. On Monday he was better and walked out, but had some vomiting in the afternoon. On Tuesday he still felt very unwell, but without any marked symptom. On Wednesday he was seized with pain in the stomach, followed by vomiting of pure blood to the amount of several pounds. This was followed by ex-

treme faintness and coldness, and the vomiting of blood returned in the afternoon. I now saw him for the first time along with Dr. Robert Hamilton, and found him extremely pale and exhausted, his skin cold, and his pulse very feeble. He complained of nothing but great faintness; but every attempt to rally him proved ineffectual, and he died in the night, having been again seized some time before his death with violent pain in the stomach.

Inspection.—The stomach was of immense size, but showed no appearance of disease in its structure, except at a part in the small arch about half way between the cardia and pylorus. Here a round defined portion about the size of a half-crown piece was much indurated and about half an inch in thickness. On the inner surface of this portion, there was a small defined ulcer about half an inch in diameter, and more than a quarter of an inch in depth, and the bottom of it was occupied by a firm fungous mass of a dark brown colour. No other disease could be detected in any organ.

Case VI.—A woman, aged 45, had been for several years liable to attacks of pain in the stomach, which at first passed off in a short time; but they gradually became more severe and of longer continuance, until at length they continued for several weeks at a time, and were little affected by any remedies. I saw her in several of these attacks during the last eighteen months of her life. While affected by them, she complained of acute pain in the epigastric region, chiefly referred to a particular spot of very small extent; it was much increased by eating, so that her only relief was when the stomach was empty; and it was accompanied by frequent vomiting, which however did not occur at any regular periods. These attacks usually continued for several weeks, and then left her for weeks or months in very good health. Three weeks before

her death, after having been for several months free from any uneasiness, she was exposed to cold by getting her feet wet, and almost immediately complained of uneasiness at the stomach. At first it was slight with loss of appetite, but after several days it became more severe with some vomiting; there was no fever, and nothing could be discovered by examination. The pain was chiefly referred to a small spot in the epigastric region, rather to the left side; and no symptom occurred different from those in her former attacks, until, after eight or ten days, she was suddenly seized with copious vomiting of blood. This occurred repeatedly; and she died rather suddenly about a week from the first occurrence of it, and about three weeks from the commencement of the attack.

Inspection.—The stomach had contracted an adhesion of small extent to the left lobe of the liver, and another of greater extent, and very firm, to the pancreas. At both these places, the coats of the stomach were diseased, but in the greatest degree at the adhesion to the pancreas. Here they were much thickened and indurated, for a space about three inches long, and two inches broad; and the internal surface of this portion was entirely in a state of ulceration. There were also on this ulcerated surface several points which penetrated more deeply, and some of these contained coagulated blood, giving every reason to believe that they had been the source of the hæmorrhage. The other parts of the stomach were in a natural state, and all the other viscera were healthy.

I consider this case as one of very great interest, on account of the periodical nature of the pain, and the long intervals of perfect health. There seems every reason to believe that the paroxysms had been connected with inflammatory action, confined to a circumscribed portion of the mucous membrane of the stomach, subsiding from time to time, and leaving the part in a comparatively healthy state; but that, under these suc-

cessive attacks, the parietes had become gradually thickened at the part, until the last attack terminated by ulceration, and this by the fatal hæmorrhage.

§V.—Simple ulceration of very small extent, suddenly fatal by perforation of the stomach.

Case VII.—A young woman, aged 18, had been affected for about six months with variable appetite, and occasional pain in the stomach, which made her frequently sit with her body bent forward, and her hand pressed upon the epigastric region. Little notice was taken of the attacks, as she was going about, and otherwise in good health; and for some weeks previous to the attack now to be described, her appetite had greatly improved. On the 26th November, 1824, while in a room by herself late in the evening, she was heard to scream violently; and when a person went into the room, she was found unable to express her feelings, except by violently pressing her hand against the pit of the stomach. When she was soon after seen by Mr. M'Culloch, she was moaning as if in extreme agony, but was unable to speak; the pulse was 86 and very weak; she could scarcely swallow; but soon after vomited the contents of the stomach, which seemed to be merely food which she had recently taken. Various remedies were employed without relief. She continued with every appearance of extreme suffering, and unable to speak, till seven o'clock in the morning of the 27th, when she said the pain was considerably easier, but was still very severe in the pit of the stomach, and was extending downwards over the abdomen. The abdomen was now becoming distended, and when I saw her about three

o'clock in the afternoon, it was distended to the greatest degree and very tense. The pulse was extremely feeble; she was scarcely able to speak, but her countenance was expressive of extreme suffering. Nothing afforded the smallest relief, and she died about two in the morning, 29 hours from the attack.

Inspection.—The cavity of the peritoneum was distended with air, and likewise contained upwards of eight pounds of fluid of a whitish colour, and fetid smell. There was slight but extensive inflammatory deposition on the surface of the intestines, producing adhesions to each other, and to the parietes of the abdomen. On the upper part of the small curvature of tho stomach near the cardia, there was a small perforation of a size which admitted the point of the little finger. Internally this opening communicated with an ulcerated space on the mucous membrane, about the size of a shilling, with slightly thickened and hardened edges, and a considerable perpendicular loss of substance. The stomach in all other respects was entirely healthy.

Case VIII.—A gentleman, aged about 60, in the year 1825, had for a considerable time suffered from complaints in his stomach. He had occasional pain, but it was not severe; his more prominent symptoms were an intense feeling of Pyrosis, and occasional vomiting. He was often obliged to leave the table suddenly during meals from attacks of this kind, in which he chiefly brought up small quantities of an extremely acrid fluid. He became much emaciated, and had every appearance of extensive organic disease, though none could be discovered on examination. He required to be kept upon the most cautiously regulated diet; and after continuing for some months in a state from which he was not expected to recover, he gradually got into his former good health, and his stomach entirely

recovered its healthy functions. He had at various times, however, slight threatenings of his former symptoms, and required to live with great caution; but he was full in flesh, and his general health was excellent. About a fortnight before his death, he had one of those slighter attacks, which affected him chiefly with a distressing feeling of Pyrosis, impaired appetite, and occasional vomiting. On account of these symptoms he was keeping the house, though able to attend to the affairs of an extensive business, until Saturday evening, 3d February, 1827, when he was suddenly seized with excruciating pain in the pit of the stomach, accompanied by some vomiting, coldness of the body, and a small frequent pulse. From the moment of this attack, nothing that was done afforded the least relief. He continued in the most violent and unceasing pain through the night and through the following day; the whole abdomen became distended and tender, with sinking of the vital powers, and he died on Sunday night, about 30 hours after the attack.

Inspection.—On the posterior surface of the stomach near the Pyloric extremity, there was a space rather larger than a shilling, where the substance of the stomach was entirely destroyed; but the margin of the opening adhered all around very closely to the surface of the liver, which thus preserved the continuity of the part. Below this portion, and very near the Pylorus, there was an ulcer on the mucous membrane, smaller than a sixpence, and through this a perforation of the coats had taken place of such an extent as would have transmitted a full sized quill. Through this opening the contents of the stomach had escaped into the cavity of the peritoneum, where there were exhibited the usual marks of extensive but recent peritonitis. Except the two spots now referred to, the stomach was perfectly healthy.

These examples will be sufficient to illustrate this most formidable modification of the disease. Many others are on record, in some of which the previous symptoms were very slight and obscure. A young lady, aged 15, mentioned by Dr. Carmichael Smith, had for many months complained occasionally of pain in the stomach: but it was so slight, that no attention was paid to it, until one evening she was seized with violent pain and vomiting, and died in 24 hours, with symptoms of peritoneal inflammation. In the anterior part of the stomach there was a round ulcer no larger than a sixpence, with hard callous edges, and some thickening of the coats at the part on which it was situated. On farther examination it was found that the ulcer had entirely penetrated the coats of the stomach by an opening sufficient to transmit a quill. The other parts of the stomach were entirely healthy. M. Gerard has collected about seventeen examples of this affection, in a memoir, "Des Perforations Spontanees de l'Estomac." In some of these there had been previously chronic vomiting, and other symptoms indicating disease in the stomach; but in others the previous symptoms were slight and obscure; and some had enjoyed tolerably good health. The fatal attack and the morbid appearances corresponded with the cases now described; and death took place in a period of from 12 to 24 hours. Several cases of the same kind are described by Dr. Crampton and Mr. Travers, in the Medico-Chirurgical Transactions. In a lady mentioned in the Journ. Gen. de Medicine for August, 1821, the attack commenced with severe pain in the epigastric region, extending towards the left kidney, and accompanied by cold shivering, dyspnœa, and prostration of strength. These symptoms subsided, but returned in the same manner every day, after taking food, for four days, leaving her in the intervals free from complaint. On the fifth day it returned, but did

not subside, and was fatal in 20 hours. In the anterior part of the stomach there was a perforating ulcer nine lines in diameter, and surrounded by a margin of slight inflammation. There was peritoneal inflammation, with effusion of a brown fluid, mixed with portions of food. The kidneys were healthy.

To these observations, may be added, the remarkable case of Admiral Wassenaer, mentioned by Boerhaave, who died suddenly in the act of vomiting, or rather of attempting to vomit, soon after he had dined. The lower part of the œsophagus had given way at the seat of an ulcer, and the food and drink which he had taken at dinner were found in the cavity of the thorax. A similar case is related in the first volume of the Arch. Gen. de Medicine. A man who had for six months suffered severely from his stomach, especially after eating, was seized with violent vomiting, which continued three days. He was then seized with palsy, and in four days more died comatose. Effusion was found in the brain. The œsophagus had given way a little above the cardia, by a rent an inch and a half long, and much fluid had been discharged into the right cavity of the pleura.

§ VI.—Old ulceration with thickening—the ulcer cicatrized on its inner surface, with loss of substance, leaving a cavity which had been bounded only by the peritoneal covering of the stomach—suddenly fatal by this covering giving way at the part.

Case IX.—A woman, aged fifty, had been for several years in bad health; her principal complaints were referred to the region of the uterus, and the os uteri was

felt to be hardened. She was also liable to pain in the stomach, capricious appetite, and occasional vomiting; but these complaints had not been so severe or regular as to attract much attention, until she was suddenly seized with most violent pain, referred to a small spot in the epigastric region, accompanied by vomiting, and followed by pain and tension of the whole abdomen, and she died in eighteen hours.

Inspection.—The stomach was healthy on its whole anterior aspect. On the posterior part, there was a portion about three inches in extent which was much indurated, and about half an inch in thickness at the centre. In the middle of this portion, there was a round excavation about one-third of an inch in diameter, and entirely penetrating the part. Internally this opening was smooth on its sides, and the smoothness extended to the bottom of the cavity, where a thin membrane seemed to have recently given way so as to make the opening ragged. The stomach in other respects was healthy. The neck of the uterus was scirrhous.

In all the examples now described, there had been some symptoms indicating more or less disease in the stomach; but in the following remarkable case, for which I am indebted to Dr. Kellie, there had been no complaint of any kind previously to the attack, which was fatal in eighteen hours.

Case X.—A strong and healthy looking servant girl, aged about twenty-one, while engaged at her work between seven and eight o'clock in the morning of one of the last days of September, 1827, was suddenly seized with excruciating pain in the belly, sickness, and vomiting. About ten, she was bled ad deliquium, and twice afterwards in the course of the day. The bowels were freely moved by an enema, and she took purgative me-

dicine which did not operate; but there was no alleviation of the symptoms. The belly became tense, tender, and tympanitic, the pulse feeble and rapid; every thing she took was vomited, and she died in eighteen hours from the attack.

Inspection. The peritoneal cavity was distended with air, and also contained a considerable quantity of fluid, which had the appearance of the liquids she had swallowed. There was extensive peritoneal inflammation, with a coating on the bowels of puriform matter. In the middle of the smaller curvature of the stomach, there was a round opening of about one-third of an inch in diameter. At the part where it was situated, the coats of the stomach were in some places nearly half an inch in thickness, and the thickening extended in a greater or less degree over a portion five or six inches in extent. The inner surface, at the place of the rupture, presented a deep excavation with rounded and smooth edges, like a deep eroding ulcer which had cicatrized. It was fully half an inch in diameter, and a third of an inch or more in depth, having penetrated the thickened substance until it was bounded merely by the peritoneal covering; and it was this which had given way in the fatal attack.

This patient had been residing in the house in which she died for four months, and was never known to complain of her stomach, or to show the smallest deviation from most robust health; and the only farther information that Dr. Kellie could obtain in regard to her was, that she had had fever in the spring.

§ VII.—Perforating ulcer of the stomach, and communication with the arch of the colon.

Case XI.—A gentleman, aged fifty-six, who had previously enjoyed good health, except occasional dyspeptic complaints, began to feel languid with impaired ap-

petite, some loss of flesh, and occasional pain in the abdomen; but he was able to go about and attend to all his engagements, which were extensive and fatiguing. These symptoms had continued two or three weeks, when one day, while walking in the street, he was seized with vomiting, and the matter vomited had the odour and appearance of feces. He felt no farther inconvenience till about a week after, when he was again seized in the same manner. After this attack he was seen by Dr. Combe of Leith, who found him with a look of impaired health, but with a natural pulse and a good appetite. His bowels were easily regulated, and no appearance of organic disease could be detected. Dr. Combe was disposed to doubt his account of the feculent vomiting, until it occurred a few days after, while he was at home, and Dr. Combe had an opportunity of seeing it. It consisted of thin healthy feces, which could not be distinguished from that which he had passed from his bowels the same day. After this, the vomiting returned at various intervals, sometimes three or four times a day; and sometimes he was free from it a week at a time. The matter vomited always consisted of pure feces, sometimes so consistent that it was brought up with difficulty, until he diluted it by swallowing hot water. During the whole course of the affection, the bowels continued regular or easily regulated; the feces varied considerably in their appearance; but that which was vomited always resembled what was passed from the bowels so closely, that it was impossible to distinguish them. He never was observed to vomit food, or other matters which had been taken into the stomach. His appetite continued good, and no disease could be detected by examination. He lived in this state three months, and died gradually exhausted, without any particular change in the symptoms, except that a week before his death he vomited a considerable quantity of blood. There was occasional pain in the

abdomen, but not distinctly referred to any particular part.

Inspection.—The stomach was found contracted and adhering to the parietes of the abdomen on the left side, and to the arch of the colon. At the place of the adhesion, a soft tubercular mass was formed, which seemed in general to be about two inches in thickness. The stomach appeared externally healthy; internally it showed a mass of ulceration which occupied the whole of its great curvature, and covered about one half of the inner surface of the stomach. The pylorus and whole pyloric extremity were healthy. In the centre of the ulcerated part there was a ragged irregular opening fully two inches in diameter, which made a free communication with the arch of the colon; and, around the opening, there was also some ulceration of the mucous membrane of the colon. The intestines in all other respects were healthy. The small intestines were empty; the caput coli was distended with feculent matter, and the colon throughout contained healthy well formed feces.

§ VIII. Extensive ulceration of the stomach of a cancerous character.

I conclude this part of the subject with the following remarkable case, which I do not attempt to refer to any class. It is perhaps one of the most extraordinary examples on record of destruction of the stomach by ulceration, and the disease had more of a cancerous character than in the cases formerly described.

Case XII.—A lady, aged 49, had been in bad health through the winter 1811-12, complaining chiefly of

weakness and a constant uneasiness across the region of the stomach, with occasional attacks of acute pain towards the left side. In May, 1812, she began to have vomiting, which continued from that time, and became more and more urgent. I saw her in July, and found her much emaciated; she complained of a dull pain in the epigastric region, where considerable hardness was felt; and she vomited a portion of every thing she took, sometimes immediately after taking it, and sometimes a considerable time after. She continued with little change till the beginning of September, when the vomiting subsided, and she was free from it for more than a fortnight. But during this time she was affected with diarrhœa; her strength sunk, and she died on the 23d,—the vomiting having returned, though with less severity, three or four days before death. During the period when she was free from vomiting, she took food and drink of various kinds, and in very considerable quantity, and continued to do so till a few hours before death.

Inspection.—On opening the abdomen and looking for the stomach, a large irregular opening presented itself, which was found to lead into the cavity of the stomach, in consequence of a large extent of its great arch being entirely destroyed. In the left side, there was a large irregular mass, which appeared to consist of an enlarged and diseased spleen and the remains of the great arch of the stomach, so blended into one mass, that it was impossible to distinguish one part from another; in the substance of it there was a cyst full of very fetid matter. This mass was attached to the cardia by a narrow portion, which remained of the coats of the stomach at that place; and when the parts were taken out and displayed, by suspending the stomach by the cardia and the pylorus, the appearances were very remarkable. When stretched out in this manner, about one-half of the stomach at the pyloric extremity

was sound and healthy. This part was attached to the cardia by a narrow portion of the small curvature which remained; and by another small portion of the greater curvature, the large irregular mass now referred to hung down on the left side. The left side and lower part of the great arch of the stomach was entirely wanting to such an extent, that, when the parts were extended in the manner now mentioned, it seemed as if nearly one half of the stomach had been entirely destroyed. There was reason to believe that the part which seemed to be wanting was involved in the diseased mass on the left side. The sound parts were separated from this portion by a line of ulceration of such extent, that the pyloric extremity remained attached to the cardia only by a portion about two inches in breadth which remained of the small arch. The ulcerated edge, where the separation had taken place, was studded with numerous hard tubercles like the edges of a cancerous ulcer. The pancreas was hard; the liver was pale and soft; the other viscera were healthy.

DIAGNOSIS AND TREATMENT OF THE AFFECTIONS OF THE STOMACH REFERRED TO UNDER THE PRECEDING HEADS.

From the facts which have been related, we have every reason to conclude, that the dangerous affection referred to in the preceding observations exists in two conditions; namely, chronic inflammation of a defined portion of the mucous membrane of the stomach, or the mucous follicles,—and the termination of this by ulceration. In both these conditions, it may probably be the subject of medical treatment; for we have reason to believe, that the inflammation may be arrested and prevented from passing into ulceration, and that the ulceration may heal before it has become connected with any permanent change in the organization of the

part. Hence appears the importance of minutely watching the progress of the disease in its early stages, in which only it is likely to be treated with success. The difficulty here is in the diagnosis,—the disease often assuming the character of a mere dyspeptic affection through a great part of its progress; while, in fact, a morbid condition of a very serious nature is going on, which would require treatment in many respects very different from that adapted to dyspepsia.

The disease may be suspected, when there is pain in the stomach occurring with considerable regularity immediately after meals, and continuing for a certain time during the process of digestion, especially if the pain be distinctly referred to a particular spot, and if there be at that spot tenderness on pressure. It may be farther suspected, if the pain continues severe until the patient is relieved by vomiting; but we have seen that the disease may go on to a very advanced period without vomiting, and, on the other hand, that it is sometimes indicated by vomiting occurring occasionally, without any regular periods, and with very little pain. In the cases will be seen other important varieties in the symptoms, which are of great interest in a practical point of view, particularly the intense and peculiar feeling of pyrosis mentioned in Case VIII. When this feeling occurs with great intensity after food of all sorts, taken even in the most moderate quantities, we have reason to suspect disease of the mucous membrane of the stomach. The feeling appears to be in some cases connected with the formation of an acrid fluid, which we often see brought up in considerable quantities; and in others, seems to depend merely upon the morbid condition of the mucous membrane itself, in consequence of which, ordinary articles produce that peculiar feeling of irritation, which in the sound state of the parts is produced by matters of an acrid quality. It is common to hear such patients say, that attention to diet

makes little difference in their feelings, but that every thing turns immediately to intense acidity, even a bit of meat or a glass of cold water. The disease may be also suspected, when, along with any of the above mentioned symptoms, though in a mild and obscure form, the patient is becoming weakened and emaciated in a manner which a mere dyspeptic affection could not account for. The affection, again, is sometimes accompanied and characterized by a raw and tender state of the tongue and throat ; in some cases, with minute ulcers ; and in others, with the formation of slight aphthous crusts. One gentleman lately stated to me that his complaint began with minute ulcers and a burning sensation on the tongue, and that he afterwards distinctly felt the same state of disease extending gradually along the œsophagus, and at last into the stomach.

Amid such a diversity of symptoms as occur in connection with this disease, our chief reliance in the diagnosis must probably be on a careful examination of the region of the stomach itself, with the view of discovering the existence of tenderness referred to a particular part. This examination should be made with the most minute attention, at various times, both when the stomach is full and when it is empty. If induration be discovered, the character of the case will be obvious ; but we have seen, that most extensive ulceration may exist without any induration ; and likewise, that extensive induration may exist without being discovered by external examination.

Other important cautions in regard to the diagnosis will be learned from the cases which have been described. In particular, we should not be deceived, either by the pain having remarkable remissions and the patient enjoying long intervals of perfect health, or by remarkable alleviation of the symptoms taking place under a careful regulation of diet ; for these circumstances we have found occurring in a very striking manner,

while the disease was making progress to its fatal termination.

When the disease is detected at an early period, the treatment must consist chiefly of free and repeated topical bleeding, followed by blistering, issues, or the tartar emetic ointment. The food must be in very small quantity, and of the mildest quality, consisting chiefly or entirely of farinaceous articles and milk, with total abstinence from all stimulating liquors; and it would appear to be of much consequence to guard against any degree of distention of the stomach, that can possibly be avoided even by the mildest articles. The patient should abstain in a great measure from bodily exertions, and hence the importance of endeavouring to distinguish the disease from mere dyspepsia, as the regimen and exercise which are proper and necessary in a dyspeptic case, would in this case be highly injurious.

In the early stages, little probably is gained by medicine given internally, beyond what is required for the regulation of the bowels. In the more advanced stages, or when there is reason to suspect that the disease has passed into ulceration, the same observations will apply in regard to external applications and regimen; and benefit may now be obtained by some internal remedies, such as the oxide of bismuth, lime water and nitric acid; and, in some cases, small quantities of mercury appear to be useful. Small opiates, combined with articles of a mucilaginous nature, appear frequently to be beneficial,—likewise articles of an astringent nature, such as kino, alum, and the Rhatany root. The arsenical solution has also been recommended, and small doses of the nitrate of silver; and in several instances in which I have suspected this disease to be going on, I have found remarkable benefit from the sulphate of iron. Whether the disease can be cured, after it has advanced to ulceration, must indeed remain

in some degree a matter of doubt; because in a case which has terminated favourably, we have no means of ascertaining with certainty that ulceration had existed. In some of the cases, however, which have been described, we have seen every reason to believe that some of the ulcers had cicatrized, though the disease had afterwards gone on to a fatal termination; and from what we observe in the intestinal canal, we can have little doubt that simple ulceration of the mucous membrane may cicatrize. I am satisfied that I have seen the cicatrices of such ulcers when the patient has died of another disease, after having been for a considerable time free from any symptom in the bowels.

I insert here the following case, without deciding whether it is referrable to the affection which has been the subject of the preceding observations. In a practical point of view it is of some importance.

Case XIII.—A lady, aged about 30, came to Edinburgh from a distant part of the kingdom in summer, 1818. She was affected with violent pain in the stomach, which seized her every day immediately after dinner, continued with great violence through the whole evening, and gradually subsided about midnight; it sometimes seized her after breakfast, but more rarely. The complaint was of two years' standing, during which time a great variety of practice and every variety of diet had been tried, but with very slight and transient benefit. The paroxysms occurred with perfect regularity; she was considerably reduced in flesh and strength, and had a sallow unhealthy look, and her whole appearance gave strong grounds for suspecting organic disease. In the epigastric region no hardness could be discovered, but there was considerable tenderness on pressure at a particular spot. Various remedies were employed during the summer with little advan-

tage; at last, however, she appeared to derive some benefit from lime water, and returned home in the autumn rather better. But the affection soon recurred, and she returned to Edinburgh in 1819, as bad as ever. After another trial of various remedies, this severe and intractable affection subsided entirely under the use of the very simple remedy to which I have above referred. She took two grains of the sulphate of iron three times a day, combined with five grains of the aromatic powder and one grain of aloes, which was found sufficient to regulate the bowels. Under the use of this remedy she was soon free from complaint, and has continued to enjoy good health.

In every form and every stage of the affection, the utmost attention to diet, both as to quality and quantity, is of essential and indispensable importance. The farinaceous articles and milk are those which seem in general to agree best; and some cases have been found to make most satisfactory recoveries under the use of a diet restricted entirely to small quantities of milk or soft fresh-made curd, after they had exhibited for a length of time every character of most formidable or nearly hopeless disease. The following interesting case of this kind has been communicated to me by Dr. Barlow of Bath.

Case XIV.—A female, whose age is not mentioned, had for a considerable time laboured under symptoms which were supposed to indicate scirrhus of the pylorus, and her case had been regarded as entirely hopeless. She suffered severe pain in the stomach when the smallest quantity of food was taken in, with great tenderness upon pressure and constant vomiting, which occurred regularly about the same period after eating, at which it usually takes place in affections of the pylorus. A variety of treatment had been employed without benefit,

when Dr. Barlow determined upon trusting entirely to regimen, by restricting her to a diet consisting wholly of fresh-made uncompressed curd, of which she was to take but a table-spoonful at a time, and to repeat it as often as she found it advisable. On this article she subsisted for several months, and recovered perfect health.

An inflammatory affection of the mucous membrane of the stomach of a peculiar kind, is frequently met with in practice, in conjunction with a general inflammatory condition of the whole course of the mucous membrane from the pharynx downwards. I think it sometimes occurs as an idiopathic disease, but I have generally observed it taking place at an advanced period of other diseases,—as simple fever, or any of the inflammatory affections, as pneumonia. There is a peculiar rawness and tenderness of the whole mouth and throat; often with a dry and glazed appearance of the tongue, a deep redness of the pharynx, interspersed with aphthous crusts; and, in some cases, the whole pharynx presents one continued dense crust of an aphthous character. There is generally tenderness on pressure in the epigastric region, with uneasiness in swallowing along the whole course of the œsophagus, and great uneasiness in the stomach, excited by the mildest articles of food or drink. In some cases, this is immediately communicated to the bowels, and the articles speedily pass off by a rapid diarrhœa. In other cases, vomiting takes place, and in others, both vomiting and diarrhœa. I have not seen the affection fatal, when the original disease had been removed; but I have seen it assume a very alarming character, with a very rapid pulse, and extreme exhaustion. The remedy which I have generally found most useful is lime water, or equal parts of it and a strong decoction of quassia. Small opiates are

required, with very mild articles of food; and, when there is much sinking, wine or brandy, mixed with arrow root. The following case will illustrate the affection.

Case XV.—A woman aged 30, and previously healthy, after some continuance of a febrile disorder, with very mild symptoms, became affected with pain and tenderness in the epigastric region, extending over the abdomen. The mildest articles of food produced great pain; there was diarrhœa, with much griping, and frequent vomiting. The affection was accompanied by a feeble rapid pulse, great debility, and collapse of the features; and there was a peculiar rawness and tenderness of the mouth, tongue, and throat. After various remedies had been employed without benefit, the symptoms subsided speedily under the use of lime water.

The aphthous affection of the mouth and throat, which is sometimes fatal to infants, seems to be allied to this diseased condition of the mucous membranes; and it is often found to be connected with minute ulcers of the mucous membrane of the intestine. A similar condition occurs in advanced stages of phthisis, and is often the prelude to the colliquative diarrhœa. It is likewise found affecting the mouth and throat, accompanied by tenderness along the œsophagus and in the stomach, when there is no affection in the bowels.

Another modification of disease in the mucous membrane of these parts, is that to which the French have given the name of Diphtherite. It does not appear to be a common affection in this country; but I have had opportunities of seeing it at various times, particularly in summer 1826, when it was frequent and fatal in Edinburgh. It is an epidemic chiefly affecting children. The first symptom is a deep redness of the ton-

sils or velum, without swelling or ulceration ; but with the formation of aphthous crusts, which are generally of a pure white colour. When these crusts either are removed, or drop off spontaneously, the membrane beneath is seen to be deeply red without breach of surface, and the crust is reproduced in a few hours. We find usually excoriation, or very minute ulcers along the inner membrane of the cheeks and lips, and a painful excoriation of the membrane of the nose,—often sponginess and bleeding of the gums ; and, in some cases, the whole mouth becomes inflamed in a manner resembling the effects of mercury. There is in general little fever, but great prostration of strength, and often a diseased state of the whole system, in which blistered parts run to gangrene, and even the slightest scratch is apt to assume an ulcerative action, with some vesication, and inflammation of the neighbouring lymphatics. The disease is in some cases a slight affection, confined to the fauces ; but in others, it evidently extends along the œsophagus and to the stomach, producing tenderness of the epigastrium and vomiting ; and in a few cases there was diarrhœa, with excoriation about the anus. The most formidable termination of it was that in which the affection extended to the larynx, when it was rapidly fatal, with all the symptoms of croup in its most untractable form. In the epidemic of 1826, I saw no case fatal except when the disease extended to the larynx ; but of those patients in whom the larynx was distinctly affected, very few recovered. The disease was often protracted for several weeks ; and in some cases, which had previously been going on in a mild form, the fatal affection of the larynx took place so late as the 14th day. When this termination did not occur, the affection seemed to run through a certain course, over which medical treatment had little control. It was in general necessary to support the strength, frequently by wine in considerable quantities ;

and benefit seemed to be obtained from the free use of the vegetable and mineral acids; careful regulation of the bowels, without strong purging; very free ventilation, and frequent sponging of the body with tepid vinegar and water. When there was much affection of the stomach, the bismuth appeared to be useful, or lime-water, with small opiates. Gently stimulating or acid gargles were in some cases beneficial. Dr. Hamilton recommends the acetate of lead, both internally and in gargles. M. Bretonneau trusts chiefly to the free use of calomel; and he touches the fauces, by means of a sponge, with a mixture of equal parts of honey and hydro-chloric acid. When the larynx is affected, the danger is extreme, for the disease does not in general bear bleeding, and blisters are apt to run to gangrene. The free use of calomel seems to be the only practice that is capable of arresting it. One of the most satisfactory recoveries that occurred to me under these circumstances, was in the case of a child of fourteen months. He took in the first 24 hours 24 grains of calomel, combined with occasional opiates, and a diminished quantity for a day or two after.

The disease has been described by Dr. Hamilton, jun. in the Edinburgh Journal of Medical Science for October 1826; and at great length by M. Bretonneau, in a work, "Des Inflammations Speciales du Tissu Muqueux." The error of the French writers consists in having, from their zeal for generalizing, considered the affection as synonymous with croup. There is every reason to consider it as being primarily an affection of the mucous membrane of the fauces and œsophagus, which may go no farther, or may extend, in one case to the stomach, in another to the larynx. It is distinguished from the cynanche maligna, and the sore throat of scarlatina, by the absence of ulceration; and it is evidently an affection quite distinct from the idiopathic inflammation of the membrane of the larynx, to which

we commonly apply the name of croup. The distinction is of much practical importance ; for when, either in this disease or in the cynanche maligna, the inflammation extends to the larynx, the cases do not bear any active treatment, and a very large proportion of them are hopeless. But the idiopathic croup is a pure active inflammation, in which, by early and decided treatment, we have the fairest prospect of being able to arrest its progress.

Dr. Cheyne has described a remarkable affection, in some respects very similar to that now mentioned, which was fatal to four individuals in one family, all adults. The symptoms were aphthæ covering the pharynx, tenderness of the epigastrium, and untractable vomiting of a fluid the colour of verdigris. The body was examined in one of the cases only. The veins on the internal surface of the stomach were remarkably turgid : the mucous membrane, particularly at the great extremity, was of a dark mahogany colour, which appeared to be owing to vascular distention and general extravasation into the submucous tissue. The mucous membrane of the œsophagus was of a deep red colour, and highly vascular.*

A singular affection has been described by various writers, in which the stomach has been found, after death, perforated by large irregular openings, while no symptom had previously existed, indicating extensive disease of the stomach ; or even when the patient had died of another disease, without any symptoms referrable to the stomach. This appearance has been ascribed by Hunter and others to solution of the substance of the stomach by the gastric juice ; but it must be confessed that this doctrine seems extremely questionable, for, were the gastric juice capable of producing such an ef-

* Dublin Hospital Reports, Vol. IV.

fect, the appearance ought to be of much more frequent occurrence. This curious subject has been carefully and ably investigated by Dr. Gairdner, in the first volume of the Med. Chirurgical Transactions of Edinburgh. In his cases, the appearance occurred in children, and was preceded by obscure symptoms indicating general febrile disturbance, usually accompanied by some symptoms referable to the stomach and bowels, as vomiting or diarrhœa. On the other hand, the appearance has been observed in the bodies of persons who died by violence; and there are some observations which tend to show that it may take place even after death. In a case by Mr. Burns, the parts were sound on the first examination of a body at the usual period after death; but, upon a second inspection, two days after, this peculiar destruction of parts was found to a considerable extent; and, in the experiments of Dr. Wilson Philip, upon rabbits, he found in many instances the great arch of the stomach dissolved to a great extent and perforated, especially when the animal had been killed very soon after eating fully, and when the body had been left for some time after death before it was examined.

The affection differs entirely from the diseases which have been the subject of the preceding observations, exhibiting no character of ulceration, or, in general, of inflammation. It is a soft gelatinous or pulpy degeneration of the substance of the stomach. Part of the softened portion commonly has fallen out, leaving an opening which is surrounded by the parts in a thin state and partially softened, but in general without any appearance of increasing vascularity. The perforation is in some cases very large; in others, there are four or five perforations, separated by narrow portions in a partially softened state; and, frequently, there is no actual perforation, but merely a considerable extent of the

stomach much softened, which tears upon the slightest touch.

Upon the whole, the conclusion, in regard to this singular affection, seems to be, that it takes place after death ; that it has been in some cases preceded by disease of the stomach ; but that, in others, there has been no ground for believing the existence of any such disease. It is certainly not an appearance on which any pathological principle can be founded, in regard to previous disease ; and this is a point of the utmost consequence, especially in reference to the judicial examination of bodies in cases of suspected poisoning. For various interesting details in regard to it, I refer to Dr. Gairdner's essay.

Nearly the same observations seem to apply to the ramollissement of the mucous membrane of the stomach, on which much attention has been bestowed by some of the French writers, particularly in a very interesting memoir by M. Louis.* This appearance consists in portions of the mucous membrane being found in a soft state like semi-transparent mucous, in general without any other disease of the parts. In nearly all his cases, it occurred in persons who had also been affected with other diseases, chiefly phthisis ; and they had complained for some time before death of pain and heat in the epigastric region, with loss of appetite, nausea, and occasional vomiting. It is, however, to be observed, that, in a large proportion of the cases described by M. Louis, there existed some other disease capable of accounting for derangement of the functions of the stomach and uneasiness in the epigastric region, such as disease of the liver and spleen, and ulceration of the mucous membrane of the bowels ; and farther, that M. Louis himself shows this ramollissement of the mucous membrane existing where there had been no symptom refer-

* Louis' Memoires et Recherches Anatomico-pathologiques.

red to the stomach. Upon the whole, there seems reason to doubt whether this is to be considered as an appearance on which can be founded any principle in pathology.

SECTION II.

OF ORGANIC DISEASES OF THE STOMACH.

MANY of the cases referred to under the former section, might properly have come under the head of organic disease, from the thickening of the coats of the stomach, and other permanent changes in the structure of the parts; but, in most or all of them, the ulceration of the mucous coat appeared to have been the primary disease. In this section I shall refer to some affections more purely organic; and, as they are seldom the objects of medical treatment, I shall mention them very briefly under the following heads:

I. Induration and thickening of the Coats of the Stomach.

II. Diseases of the Pylorus.

III. Disease of the Cardia.

§ I.—INDURATION AND THICKENING OF THE COATS OF THE STOMACH.

CASE XVI.—A woman aged 56, (August 1816,) had been liable, for about a year, to disorders of the stomach, consisting chiefly of distention, acidity, and occa-

sional attacks of acute pain. After several months from the commencement of these symptoms, she began to be affected with vomiting; and, for the three or four last months, had vomited daily, generally in the afternoon or evening, at irregular periods after dinner. Sometimes she escaped it till she went to bed; but then it always came on early in the night. A hard tumour of considerable extent could be felt in the epigastrium. She died in September, in a state of extreme emaciation, having, before death, discharged much blood, both by vomiting and by stool.

Inspection.—The stomach adhered to all the neighbouring parts, so that it was with difficulty separated from them. The cardia and pylorus were healthy, and also a small portion of the stomach adjoining to each of these openings. The whole of the smaller curvature, except these two portions, presented one continued mass of scirrhus hardness, in general, about an inch in thickness; and, when cut into, white and very firm. On the inner surface of this portion, about its centre, there were two tumours, the one the size of a pigeon's egg, and the other of a hazel nut. Externally they were of a dark purple colour, internally white. The large curvature and the anterior part of the stomach were extensively ulcerated, dark coloured, and of very irregular thickness; and at one place, there was a perforation the size of a shilling. The pancreas was hard, and the liver tubercular. The other viscera were healthy.

It is unnecessary to multiply cases of this kind which present little variety in their characters, and admit of no treatment. The disease consists, in some cases, of an uniform hard mass, with the characters of scirrhus, or almost of cartilage; in others, it has more the appearance of a mass of tubercular disease, and, frequently, a considerable part, or a mass of tumours projecting from it internally, is of a soft texture resembling the

substance of the brain. In a case by Pinel, a large abscess had formed in the substance of the diseased mass, and had burst into the cavity of the stomach. A large tumour in this case had been felt in the epigastric region, had been gradually increasing, and suddenly disappeared during a fit of coughing, a considerable time before the death of the patient.

§ II.—Diseases of the pylorus.

In a pathological point of view, there are some facts relating to the diseases of the pylorus, which are worthy of being recorded, though they can seldom become the objects of medical treatment.

Disease of the pylorus may begin in a slight and insidious manner, like a mere dyspeptic affection, and gradually exhibit its more confirmed characters; or, it may come on in a more rapid manner, with acute symptoms resembling an inflammatory attack. In its advanced state, it is generally distinguished by periodical vomiting, occurring at certain regular intervals after meals, generally with fixed uneasiness in the region of the stomach; and we can commonly discover, on examination, more or less induration in the region of the pylorus. But we find remarkable deviations from these, which we are apt to consider as the established characters of the disease. The cases which I shall here introduce are intended to illustrate some of these deviations, by showing extensive disease of the pylorus, existing with remarkable remissions in the symptoms, and considerable intervals of good health,—without any vomiting,—and without any induration that could be discovered on examination.

Case XVII.—A gentleman, aged 30, had been for several years liable to paroxysms of pain in the stomach, which usually continued for several hours, and went off with vomiting. They returned at uncertain intervals, frequently of many weeks; and, upon several occasions, he seemed to have got entirely free from the disorder. He was in other respects in tolerable health, until about a year before his death, when he was suddenly seized with copious vomiting of blood. From this time, his attacks of pain in the stomach became more frequent, and he had repeated attacks of the vomiting of blood; but still he had considerable intervals of health; no hardness could be discovered by examination; and that uniformity of symptoms was entirely wanting which usually accompanies organic disease. After having complained for two days of pain in the stomach in the usual form, he was found in the morning of the third day exhausted and without pulse, and died in a few hours: but he was not emaciated; and, three days before his death, he had been able to walk out a good deal, and made no particular complaint.

Dissection.—The pylorus was surrounded by a mass of scirrhus, the size of an orange, very firm, or nearly cartilaginous. The stomach in other respects was entirely healthy, as were also the liver, the spleen, and the pancreas. There were considerable adhesions among the intestines; and there was slight ossification of the valves on the right side of the heart.

Case XVIII.—A man, aged 40, came under my care in December, 1817. He was weakened and emaciated to the last degree, with a weak pulse at 120, but without any other complaint; he had no pain and no cough, his appetite was good, his bowels were natural, and the functions of the stomach were entirely healthy. About half way between the ensiform cartilage and the um-

bilicus, a hardness was felt which could be traced for several inches, and was painful upon pressure. He had been ill eighteen months, and the affection had commenced with vomiting, which occurred generally five or six times a day. This continued for five or six months, when the vomiting ceased entirely; and, for the last twelve months, he had no complaint, except progressive debility and emaciation. He died completely exhausted in the beginning of February, having continued without any other symptom than repeated attacks of violent pain in the abdomen.

Inspection.—A mass of scirrhus, four or five inches in diameter, surrounded the pylorus; and the pyloric orifice was so narrowed, as scarcely to admit the point of a very small finger. The inner part of the mass opened upon the internal surface of the stomach, by an ulcerated space covered with large cancerous looking tubercles. The other parts of the stomach were tolerably sound, and the other viscera were healthy.

Case XIX.—A gentleman, aged 66, came under my care only a few weeks before his death. He was then emaciated in an extreme degree, with an exhausted withered look. He had been long in bad health, but particularly for the last four months, during which period he had been affected with frequent vomiting, which however did not occur at any regular periods. When questioned about it, he said, that he seemed to vomit by a voluntary effort to relieve an extreme uneasiness which took place in his stomach; and accordingly, by putting him upon a regulated diet, it appeared that he could in a great measure prevent it. His debility and emaciation, however, continued to increase, and he died in a state of extreme exhaustion in June, 1817. No organic disease could be discovered on the most careful examination, and for some weeks before his death the vomiting had in a great measure subsided.

Inspection.—The pylorus was surrounded by a mass of scirrhus, the size of a small apple ; and the internal part of it projected into the cavity of the stomach, in the form of numerous hard papillæ. The principal projection of the mass was backwards, where it had formed adhesions, by means of which the pylorus was firmly bound down to the pancreas. The pyloric orifice was not much contracted, as it admitted the point of the thumb. The stomach was in other respects sound, and the other viscera were healthy.

These cases show disease of the pylorus existing with remarkable deviations from the more common characters of the affection ; but they are not in these respects singular exceptions to the general history of the disease. A man mentioned by Chardel was affected with a strong pulsation in the epigastric region, in which a pulsating tumour was felt corresponding with the pulsation of the heart. It was most troublesome when his stomach was full, but his appetite was good, and the functions of his stomach were unimpaired. He became gradually exhausted, and died without any other symptom, except diarrhœa and œdema of the legs. The tumour was found to be an enormous mass of scirrhus, occupying the posterior part of the pylorus, and extending along the small curvature of the stomach. The pancreas also was hard, and the liver tubercular. A woman mentioned by the same writer, had pain in the epigastric region, followed by very deep jaundice, and died, gradually exhausted with diarrhœa and ascites. On dissection, there was found scirrhus of the pylorus and of the pancreas ; and the latter compressed the ductus communis. In another case, complicated with enlargement of the liver, the patient died, gradually exhausted by violent pain in the epigastrium, without vomiting. A mass of scirrhus three inches in

length occupied the pylorus, and extended along the small curvature of the stomach.

It does not appear that these varieties in the symptoms depend upon the degree of contraction of the pyloric orifice; for, in Case XIX. there was little contraction; and in a case by Chardel, there did not appear any contraction at all, though a large mass of scirrhus surrounded the pylorus. In this case, there had been frequent vomiting, with violent attacks of pain. In Case XVIII. on the other hand, there was great contraction of the orifice; and in a case mentioned in the "Journal de Medicine," for October 1815, the pyloric orifice was nearly closed, though the patient had died of gradual emaciation, and there had been no vomiting until three days before death.

We have seen that there may be extensive disease of the pylorus which cannot be discovered during the life of the patient. This may result from the mass being bound down by adhesion to the parts behind, as in Case XIX. But besides this, the disease may be of so small extent as not possibly to be detected in this manner, while it is capable of producing the usual symptoms in their most violent form. In a case by Dr. Morrison,* the pylorus was almost totally obstructed by small tubercles arising from its internal surface, without any external disease. The patient died, after several years' illness, with pain of the stomach and vomiting; and in a case by Chardel with the same symptoms, the pyloric orifice was reduced to a very small chink, but with very little external enlargement; consequently nothing had been discovered during life, though the patient was very much emaciated.

* Med. Ob. and Enq. vol. vi.

§ III.—Disease of the cardia.

Case XX.—A man, aged 38, consulted me in summer, 1815, on account of difficulty in swallowing. The articles swallowed seemed to lodge at a spot to which he pointed, (corresponding to the seat of the cardia,) and were almost immediately brought up again. He had been for many years liable to this affection in a greater or less degree, but at first it attacked him only occasionally, and he was sometimes for several months together entirely free from it. For some time back it had become more permanent. He had pain on pressure behind the ensiform cartilage, and a slight hardness could be felt there. At this time he could swallow liquids, but in the course of the summer the complaint increased, until he could scarcely swallow a drop of any thing; articles of all kinds lodged for a few seconds in the lower part of the œsophagus, and were rejected. He died gradually exhausted in November.

Inspection.—A mass of scirrhus about three inches in length extended from the cardia along the course of the œsophagus, and nearly obliterated the passage; at the cardia it projected into the stomach by several round protuberances. The stomach was healthy.

Case XXI.—A man, aged 60, had been liable for many months to difficulty in swallowing, which had at different times been better and worse, and sometimes entirely removed for a week at a time; but he was now emaciated to a great degree. By the probang an obstruction was felt about the middle of the œsophagus; and under treatment directed to this in the usual manner, he seemed to improve considerably in swallowing.

But his strength continued to sink, and he died after a few weeks.

Inspection.—There was a slight contraction about the middle of the œsophagus, two inches in extent, without any thickening of its coats. The cardiac orifice was compressed by a tumour the size of a walnut, situated on the outside of the œsophagus, or rather confined under its external membranous covering, without any other disease of the parts.

SECTION III.

PATHOLOGY OF DYSPEPSIA.

When the digestive organs are in a healthy state, it appears that a mass of food, composed of a variety of articles, is changed, in the course of from three to five hours, into a homogeneous pultaceous matter called the chyme. The observations of Majendie have rendered it probable, that, sometime after the process of digestion has commenced, a motion begins to take place in the stomach, by which the contents are slowly moved backwards and forwards betwixt its splenic and pyloric portions. This motion is said to be more active, and to extend over a greater portion of the stomach, when it contains but a small quantity of food; and to be more limited when the quantity is large, being then in a great measure confined to a portion near the pylorus. After this alternate motion has continued for a certain time, the chyme is at last gradually propelled into the duodenum, and thence very gradually through the intestinal canal, by a certain consecutive muscular action, which is called its vermicular or peristaltic motion. In

this course, the alimentary matter is mixed with the bile, pancreatic juice, and the fluids of the intestinal canal; and it undergoes farther important changes, by which it is converted into chyle fit for absorption, and the excrementitious matters are separated and expelled. The fluid called the gastric juice appears to be merely a mixture of the mucous and follicular fluids of the stomach. It is evident that it bears an important part in digestion, but not as a mere chemical solvent, for it is not found to dissolve articles of food out of the stomach. All that we know therefore of digestion is, that it is the result of the combined action of this fluid, and of the peculiar muscular motion of the stomach now referred to. In healthy digestion, it appears that no gas is generated in the stomach, but that a certain quantity is evolved in the farther progress of the alimentary matters through the intestines, especially in the colon; and it is said to be composed of carbonic acid, hydrogen, and azot, in various proportions.

When these actions are in any respect deranged or deficient, the alimentary matters are not converted in the regular manner into healthy chyme; but, remaining perhaps longer in the stomach than, in the healthy state of the process, they would do, they undergo in a greater or less degree those chemical changes, which would happen to them in other circumstances. Hence the generation of acidity, the evolution of gases of various kinds, and the lodgment in the stomach of matters imperfectly digested, partly fermented, perhaps partly putrid; hence, also, irregular muscular contractions, arising from the morbid stimuli thus produced, giving rise to regurgitations of matter into the œsophagus, eructations, and perhaps vomiting; or, the muscular coat yielding to the distending force of the evolved gaseous fluids, there are produced painful distention, oppression, and anxiety, or in other words, a paroxysm of dyspepsia.

For the healthy condition of the process of digestion, in all its stages, the following circumstances appear to be necessary :

1. A healthy state of the muscular action of the stomach.

2. A healthy, consecutive, and harmonious action of the muscular coat of the intestinal canal.

3. A healthy state of the fluids of the stomach, both as to quality and quantity.

4. A healthy state as to quality and quantity of the other fluids, derived from the liver, pancreas, and intestinal membrane.

5. A healthy state of the mucous membrane itself, both in the stomach and intestines.

The dependence of the function of digestion upon the influence of the eighth pair of nerves, is among the most beautiful discoveries of modern physiology ; but nothing of a practical nature has hitherto been deduced from it.

In the preceding part of this treatise, we have seen these functions deranged by various diseases of the coats of the stomach ; but our attention, under the present section, is chiefly directed to those cases in which the derangement is of a functional nature, or not connected with any change of structure either of the stomach itself, or of any of the neighbouring parts. Upon the strict principles of pathology, it is extremely difficult to ascertain the exact nature of these functional derangements, as they are merely impaired actions of living parts ; but I think there are a few points which we may consider as not entirely conjectural.

1. We have much reason to believe, that the muscular action of the stomach may be deficient, so that the alimentary matters remain in it too long, are imperfectly changed, and pass into chemical decompositions.

We know the state of the urinary bladder, in which its muscular action is lost or very much impaired, and in consequence of which, it is gradually distended, so as to hold an enormous quantity of fluid; and when emptied by the catheter, it does not contract equally, as in the healthy state, but falls flat like an empty bag. A state analogous to this we not unfrequently see in the stomach on dissection,—a state in which it appears much enlarged, and collapsed by flattening, without healthy contraction.

2. There may be a deficiency of the corresponding and harmonious intestinal action, interfering with the second stage of digestion, and giving rise to imperfect chylification and various morbid actions in the upper intestines.

3. The various fluids may be deficient in quantity, or morbid in quality, so as to derange the process in various ways. We have grounds for assuming that the fluids of the stomach may be in a morbid condition, without actual disease of its coats. We see in certain cases a fluid brought up by eructation in large quantities, in a morbidly tenacious state, quite different from the healthy appearance of the fluids of the stomach; and we have reason to believe, that similar changes may take place in the other fluids concerned in digestion, particularly the bile.

If the mucous membrane be morbidly irritable, the muscular coat will probably be too easily excited to action, and a different state of things will arise. If this occur in the stomach, the articles will not be allowed to remain in it a sufficient time for healthy digestion; but after producing much uneasiness, they will either be rejected by vomiting, or propelled in a half-digested state into the intestine, there to prove a source of new irritation. This is probably the state to be afterwards more particularly referred to, in which animal food produces much uneasiness in the stomach, often followed

by vomiting; but in which digestion goes on in a healthy manner, on a regimen restricted to farinaceous articles and milk. If the irritability occur in the intestine, the articles may undergo their proper change in the stomach, but will be propelled too rapidly through the intestinal canal, without time being afforded for the complete process of healthy chylification; and, accordingly, in many affections of the stomach and bowels, we see articles, even of the most digestible kind, pass through partially digested, or sometimes entirely unchanged.

I have no intention of entering at any length upon the treatment of indigestion; but there are a few obvious and important rules, which, upon the strict grounds of pathology, may be deduced from the points which have been briefly referred to.

I. It appears that the muscular action of the stomach is both more vigorous and more extensive when its contents are in small quantity, than when it is much distended; and if we suppose the fluids of the stomach to be secreted in nearly a uniform quantity, their action must also be greatly regulated by the quantity of matter which they have to act upon; hence, the indispensable importance in dyspeptic cases of restricting the food to such a quantity as the stomach shall be found capable of digesting in a healthy manner. This is unquestionably the first and great principle in the treatment of indigestion; and without invariable attention to it, no other means will be of the smallest avail.

II. It appears that various articles of food are of various degrees of solubility in the stomach. When, therefore, digestion is apt to be easily impaired, it will be of the greatest importance, not only to avoid articles which are of difficult solution, but also to avoid mixing various articles which are of different degrees of solubility. Attention to this rule will probably fa-

vour in a great measure the process of chymification going on in a regular and healthy manner, by avoiding a state in which the solution of one article may be more advanced than that of another. The articles of most easy solution appear to be solid animal food, and white fish, both plainly dressed; vegetables are less soluble; and, among the articles of more difficult solution, appear to be fatty substances, tendinous and cartilaginous parts, concrete albumen, the epidermis of fruits, and, according to some, mucilaginous and sweet vegetables. From some experiment of Sir Astley Cooper, it is supposed, that the solubility of animal food is in the order of pork, mutton, veal, beef. Articles in small pieces are much more speedily dissolved than in larger, the action being found to begin at the circumference of the portion; and hence the importance of careful mastication.

III. If digestion go on more slowly and more imperfectly than in the healthy state, another important rule will be, not to take in additional food until full time has been given for the solution of the former. If the healthy period be four or five hours, the dyspeptic should probably allow six or seven. The injurious infringement of this rule by a breakfast, a meat lunch, and a dinner, all within the space of seven or eight hours, is too obvious to require a single observation.

The rules now briefly referred to, I conceive to be of more importance in the treatment of dyspepsia than any means whatever. I believe that every stomach, not actually impaired by organic disease, will perform its functions if it receive reasonable attention; and when we consider the manner in which diet is generally conducted, both in regard to quantity, and to the variety of articles of food and drink which are mixed up into one heterogeneous mass, instead of being astonished at the prevalence of indigestion, our wonder must

rather be, that in such circumstances, any stomach is capable of digesting at all. In the regulation of diet, much certainly is to be done in dyspeptic cases, by attention to the quality of the articles that are taken; but I am satisfied that much more depends upon the quantity; and I am even disposed to say, that the dyspeptic might be almost independent of any attention to the quality of his diet, if he rigidly observed the necessary restrictions in regard to quantity. It is often, indeed, remarkable, how articles which cannot be borne as a part of mixed diet, agree perfectly when taken alone; how a person, for example, who fancies that milk disagrees with him, will enjoy sound digestion upon a milk diet; and how another, who cannot taste vegetables without being tormented with acidity, will be entirely free from acidity on a vegetable diet. The following case occurred to me some time ago, in which this experiment was made in the most complete and satisfactory manner.

A gentleman, accustomed to moderate but very comfortable living, had been for many years what is called a martyr to stomach complaints, seldom a day passing in which he did not suffer greatly from pain in his stomach, with flatulence, acidity, and the usual train of dyspeptic symptoms; and in particular, he could not taste a bit of vegetable, without suffering from it severely. He had gone on in this manner for years, when he was seized with complaints in his head, threatening apoplexy, which, after being relieved by the usual means, showed such a constant tendency to recur, that it has been necessary ever since, to restrict him to a diet almost entirely of vegetables, and in very moderate quantity. Under this regimen, so different from his former mode of living, he has continued free from any recurrence of the complaints in his head, and has never been know to complain of his stomach.

In the regulation of the diet for all affections of the stomach, however, strict attention must always be paid to the nature and source of the disease. Animal food is in general the most digestible, but there are many cases which depend upon an irritable state of the mucous membrane, in which the diet found to be beneficial or even necessary, is one restricted to farinaceous articles and milk. The higher degrees of this affection, in which the disease amounts to inflammation of the mucous membrane, have already been referred to; but there appear to be modifications of it, which, without assuming this formidable character, have a similar effect on the functions of the stomach, and require similar treatment, especially in regard to diet. The subject is one of great interest, and opens a most important field of observation to him who, renouncing a mere empirical treatment of dyspeptic affections, shall direct his attention to the important varieties in the nature and source of the disease. Such a person will be astonished to find the improvement which is made in certain cases, under a diet restricted entirely to rice, arrow-root, or bread and milk, with total abstinence from all stimulating liquors, after the patient had spent years of wretchedness upon animal diet, with wine or brandy and water, and the usual round of stomachic remedies. Other cases again agree better with animal diet in very small quantity, and the moderate use of stimulating liquors. The diagnosis is often difficult, and must be guided more by the judgment and attention of the practitioner, than by any general rule. This subject has been well illustrated by Dr. James Johnson, in his treatise on Morbid Irritability of the Stomach.

In the medical treatment of dyspeptic complaints, it is impossible to advance any thing new. One thing, however, has always appeared to me to be of the utmost importance in regard to the regulation of the

bowels, which in general are habitually slow. It consists in regulating them by the daily use of very small doses of laxatives combined with tonics, so as, without ever purging, to imitate at all times that moderate but regular action, which constitutes the most healthy state of the bowels. For this purpose various combinations will be found to answer; such as Columbo powder with carbonate of potash and a few grains of rhubarb, taken once or twice a day; sulphate of iron with aloes; sulphate of quinine with aloes; oxide of bismuth with rhubarb or aloes, &c. Lime water is often useful, and the mineral acids. The nitric acid, in particular, is often found one of the best tonics, and one of the best correctors of acidity.

This kind of mild treatment, with a proper regulation of diet, and regular exercise without fatigue, appears to be the plan best adapted to the ordinary cases of dyspepsia. Injury is done by the free use of stimulants, and by active purging; and I must also express my apprehension that no small injury is done by the indiscriminate use of mercury. There are indeed some affections of the stomach, probably connected with derangements of the liver, in which a very cautious use of mercury appears to be beneficial; but in many others, it is decidedly hurtful; and I conceive that in all disorders of the stomach, mercury in any form, or in any quantity ought not to be employed when the desired effect can be accomplished by any other means. When the muscular action of the stomach is much impaired, it is probable that galvanism might be useful; the effect of it on the action of the bowels will be illustrated in a striking manner by a case to be afterwards described.

In concluding this slight outline of the pathology of the stomach, it may be right to add a few observations on some points which frequently become objects of attention in the treatment of diseases of this organ.

I. Gastrodynia or pain in the stomach. This occurs to us in practice under four different forms, which seem to imply important differences in the nature of the affection.

1. Pain occurring when the stomach is empty, and rather relieved by taking food. This probably depends upon some degree of acrimony of the fluids of the stomach itself, and is generally relieved by absorbent and alkaline remedies.

2. Pain occurring immediately after taking food, and continuing either during the whole process of digestion, or till the stomach is relieved by vomiting. This is probably connected with chronic inflammation or increased irritability of the mucous membrane of the stomach. The treatment which it requires has been referred to in the preceding observations.

3. Pain beginning from two to four hours after a meal, and continuing for some hours. This is probably seated in the duodenum, and connected with inflammatory action or morbid sensibility of its mucous membrane. This form of the affection is often accompanied by pain and tenderness on pressure in the right hypochondrium, and, on that account, is apt to be mistaken for disease of the liver. In the course of the paroxysm, the pain is apt to extend obliquely downwards and backwards in the direction of the right kidney, and thence again inwards towards the umbilicus. The duodenum evidently bears an important part in the function of digestion, and is probably the seat of some affections which are apt to be mistaken for diseases of the stomach and liver. Facts are wanting upon this subject, but the investigation promises important results. All that we can say at present is, that, if the disease be chiefly or entirely seated in the duodenum, the patient will be comparatively well for two or three hours after a meal; and that his uneasy sensations will then commence, and will in the first instance

be chiefly seated in the right side. Much confusion has arisen from the prevailing fashion of ascribing all such affections to disease of the liver.

It is difficult to say what remedies are best adapted to each of these forms of gastrodynia. I have found nothing of more general utility than the sulphate of iron, in doses of two grains, combined with one grain of aloes and five grains of aromatic powder, taken three times a-day. Oxide of bismuth combined with rhubarb in the same manner, is also frequently very useful; likewise lime-water, and small opiates. When the affection proves more obstinate, it must be treated by topical bleeding and blistering, with farinaceous diet.

4. Pain in the stomach takes place in a fourth form occurring at uncertain intervals, in most violent paroxysms; accompanied generally by a feeling of distention, much anxiety, and extreme restlessness; and, in females, it is frequently combined with hysterical symptoms. This form seems to depend upon over distention of the stomach, and is relieved by carminatives; but it is often very severe and untractable. I think the most effectual relief, in general, is obtained from exciting a brisk action of the bowels, by means of a strong injection. From the facility with which such affections often yield to this remedy, it is probable that the uneasiness is sometimes seated in the arch of the colon. External stimulants, such as sinapisms, and friction with strong spirits, often give great relief.

There seem to be some other modifications of pain in the region of the stomach, not referable to any of these classes. Among these may be reckoned a pain which affects persons of a gouty habit, and may occur either in the form of severe and sudden paroxysms, or as a more continued pain going on for many days together. It seems in general to be most relieved by stimulants, combined with alkalies and small opiates; but it requires to be carefully attended to, and treated

by topical bleeding and blistering, if it do not soon give way. There is also a violent affection of the stomach, occurring chiefly in females of an irritable habit, and assuming a spasmodic or neuralgic character. It seems in general to be relieved by opiates combined with absorbents or alkalies. All these affections of the stomach, however, should be watched with attention, for several remarkable examples have been given which show that they are often connected with chronic inflammation or ulceration, and that they may be very rapidly fatal, without having assumed any formidable character till the fatal attack.

In all these painful affections of the stomach, attention to regimen is, of course, of the utmost consequence. On this head it is impossible to lay down any general rules, as the diet must be regulated by attention to the nature and characters of the case. One rule is applicable to all of them, namely, that the food shall be always in the smallest quantity. In regard to quality, there is a great diversity. Some of the cases agree best with farinaceous diet and milk, while in others, the pain is aggravated by articles of this kind; and the patient goes on most comfortably upon animal food in small quantities, with bread, or a little rice. For a variety of interesting facts on this subject, I refer to a work by M. Barras, "Sur les Gastralgies et les Enteralgies." It is directed against the prevailing doctrine of the French school, by which all affections of this class are referred to the 'gastro-enterite chronique;' and shows in a satisfactory manner the evils which arise from the indiscriminate application of this system, and the practice founded upon it.

II. Chronic vomiting, occurring at various irregular intervals, and without suspicion of organic disease. This seems in general to be connected with a morbid irritability of the mucous membrane of the stomach,

and sometimes proves very untractable. It may occur at a short period after taking food, or at the distance of three or four hours. In the former case, the disease is probably seated in the stomach; in the latter, the pylorus or the duodenum. The treatment is very uncertain; the oxide of bismuth is in some cases extremely useful, and in others lime water. In some forms of the affection, again, articles of a stimulating nature are beneficial; and I have known some very protracted cases yield to the use of a strong tincture of garlic; and others, to small doses of calomel. Much depends upon regimen, and some of the most severe and protracted cases have got well under a diet restricted entirely to milk. External applications are also frequently useful, as blistering and tartar emetic ointment. It is to be kept in mind, that habitual vomiting often depends upon diseases of other organs, affecting the stomach sympathetically, such as affections of the kidney, the liver, the spleen, the pancreas, and sometimes the brain.

III. Obstinate and untractable pyrosis, often accompanied with discharge of quantities of thin acrid mucus by eructation, or with a feeling of constant and intense acidity, produced by articles which are not likely to become acid. These symptoms are probably connected with a diseased condition of the mucous membrane of the stomach. In some of the cases formerly described, we have seen them connected with actual ulceration; in others, the membrane appears thickened, pale, and spongy, with an increased and unhealthy secretion. A woman mentioned by Andral, vomited every day about four pints of white glairy mucus like the white of eggs; and she never vomited either food or drink. On dissection, no other morbid appearance could be discovered than a general thickened state of the mucous membrane of the stomach, which was of a brownish colour, and the follicles were remarkably developed. When the

fluid discharged is tinged of a brown or chocolate colour, ulceration is to be suspected; in other cases, only a thickened state of the mucous membrane is met with, combined with an appearance of melanosis. The fluid in these cases has been found to contain a large proportion of albumen, and the colour appears to arise from the colouring matter of the blood. The affection is very untractable; it is often benefited by lime water, bismuth, the stimulants, as garlic and benzoin, and frequently by the acids, particularly the nitric; likewise by blistering and mild farinaceous diet.

IV. Hæmatemesis. This, which we have seen as the result of ulceration, also occurs without any such disease; and I have seen it fatal where no organic disease could be discovered, and even the source of the hæmorrhage could not be detected. In other cases, a varicose state of the veins is observed in the mucous membrane of the stomach. The quantity of blood brought up is often immense, so that the patient is reduced to the last degree of exhaustion; and yet the disease is not often fatal. Some persons, especially women, are liable to frequent or almost periodical attacks of it, sometimes in connection with retention of the menses. When the patient is much exhausted, it is necessary to give small quantities of brandy at short intervals. For settling the stomach, and restraining the hæmorrhage, the acetate of lead is often very useful, and may be given in doses of one or two grains, repeated every three or four hours, for thirty-six or forty-eight hours, if necessary; also the acids, the muriated tincture of iron, bismuth, alum, and kino in powder or tincture. The blood is apt to pass into the bowels, from which it must be discharged by the mildest means, as injections repeated two or three times a-day. The patient must be supported by farinaceous nourishment in small quantities, or by milk, or fresh-made soft curd.

V. Sympathetic affections of the heart. These are often among the most troublesome symptoms that accompany affections of the stomach, and are always the most alarming to the patient. They appear under various forms, and frequently assume, in a very great degree, all the characters of fixed disease of the heart or large vessels. The slightest and perhaps the most common form consists of a momentary feeling of a rolling or tumbling motion of the heart, like that which is produced by a sudden surprise or fright, and it is accompanied by an intermission of the pulse. This feeling may be repeated only once or twice at a time, and occur at long intervals; or it may return in rapid succession, for half an hour or an hour together; or it may be felt occasionally, at irregular intervals, for several days or weeks, or for a still longer period. It is sometimes accompanied by a feeling as if the heart were violently grasped. In other cases, the affection assumes the form of continued fits of palpitation, or strong and irregular action of the heart, which continue without any remission for an hour or more at a time, and recur in this manner daily, or several times in a day, for a length of time; or recur at uncertain intervals. In other cases, again, these fits of palpitation continue for several days together. They are of course accompanied by irregularity of the pulse, when the action of the heart is itself irregular; but frequently there is no irregularity in the action,—the affection merely consisting of a strong pulsation, which the patient feels or hears throbbing in his ear, and can count distinctly by the sound, especially when he lies in bed. In other cases, again, there is only an increased frequency of the action of the heart, showing itself by paroxysms of quick pulse, accompanied with a feeling of anxiety, continuing for an hour or two at a time, without any irregularity. I shall mention in the sequel a remarka-

ble case, in which an affection of this kind continued with little remission for a year.

Betwixt the various forms of this affection and disease of the heart, the principal diagnosis consists in the pulse being regular, and the action of the heart natural, during the intervals between the attacks,—in an obvious connection with disorders of the stomach, and relief by treatment directed to that organ,—and, particularly, by the symptoms being most apt to occur while the patient is at rest, especially after meals,—not being increased by bodily exercise, but rather relieved by it,—and not being excited by such bodily exertion as we should naturally expect immediately to influence a disease of the heart. The affection is always very alarming to a patient, and sometimes perplexing to the practitioner; for, from the permanency of the symptoms, they certainly often assume, in a great degree, the character of disease of the heart, and may even exhibit some of the stethoscopic signs, particularly the *bruit di soufflet*. There is, also, in many cases, a considerable degree of dyspnœa, and sometimes there are paroxysms of it of considerable urgency. Without entering into any discussions in regard to the manner in which these singular affections are produced, the following selection of facts will perhaps be acceptable to practical men.

Between three and four years ago, a gentleman aged 52, consulted me on account of paroxysms of violent palpitation of the heart, which occurred at irregular but rather short intervals, and generally continued for several days together. He was otherwise in good health, and accustomed to take a great deal of exercise, and he did not complain of his stomach. His pulse in the intervals was quite natural; his bowels were rather confined, but very easily regulated. The affection had been going on for about three years, and

a great variety of treatment had been employed without benefit. I confess I did not expect to do any good in this case, and, rather by way of doing something, than from much expectation of benefit, advised him to take every night one grain of the sulphate of iron, with one grain of aloes, which was found sufficient to regulate his bowels. Cautions were given him with regard to his regimen; but I believe they were not attended to, for, under the simple remedy now mentioned, this severe affection very soon disappeared. After a short time, he left off the regular use of the medicine; but afterwards recurred to it occasionally for a few days, and in this manner he enjoyed very good health for upward of two years. He then went to the continent, and I lost sight of him for about a year. I saw him on his return, as he passed through Edinburgh, on his way to his seat in the north, and found him very unwell. His pulse was frequent and extremely irregular; the action of the heart was diffused, irregular, and tumultuous; he had attacks of dyspnœa, amounting at times to a feeling of suffocation; his appetite was impaired, and his general feelings were in the highest degree uncomfortable. He left Edinburgh next day, and I wrote to his surgeon in the country, expressing great apprehension, and requesting him to watch the case very narrowly. In a short time I received notice, that the patient had been attacked with gout, and that all his other symptoms had disappeared. I have heard little of him since that time, but I believe he has enjoyed good health.

A gentleman, aged 48, in November, 1825, began to be affected with paroxysms of palpitation of the heart, and intermission of the pulse. They attacked him daily, sometimes twice or three times a-day, and generally continued about an hour at each time; and they were occasionally accompanied with a considerable de-

gree of dyspnœa. During the intervals, the pulse was calm and regular, and the action of the heart quite natural. The period of the attack was generally soon after meals; but it likewise occurred at various other times; sometimes on first getting up in the morning, and sometimes during the night. During the paroxysm, he could take walking exercise without increasing the symptoms. His digestion was imperfect, and his stomach easily disordered; his bowels were rather slow, and the motions were dark and unhealthy. A great variety of treatment, and every possible variety of diet, were employed with very little benefit. He went to London, and then to Cheltenham, where much treatment was again had recourse to with little effect. He sometimes lost greatly in flesh and strength, and sometimes improved again; his digestion was sometimes better and sometimes worse; but, amid all these changes, the affection of the heart continued in the same form, namely, paroxysms of violent palpitation of about an hour's duration, occurring once or twice every day, and at no stated hours. After the affection had continued in this manner for two years and a half, it at last subsided under the use of the colchicum wine, in very moderate doses. I do not attempt to account for the action of the remedy in this singular case; it acted at first strongly as a purgative, so that he was only able to take ten drops of the wine twice a-day. The patient's own account of the effect of it is in these words: "At the time of commencing the use of the colchicum, I had once at least every day a severe fit of palpitation of an hour's duration; often two, and sometimes three fits in a day. So immediate was the effect of the colchicum, that, with the exception of the first and third days after beginning its use, I have not had a single paroxysm of the palpitation." He adds, that he continued the use of it for a month, and then left it off entirely; and that

the quantity did not in general exceed from fifteen to twenty drops in a day.

About three years ago, a gentleman, aged 65, began to be affected with some uneasy feelings in his chest, accompanied by an occasional sense of dyspnœa. On examination, his pulse was found to be very rapid, seldom under 120 often 130 or more, with some irregularity, and it was uniformly thus frequent at all hours of the day. The action of the heart was frequently slightly irregular; his digestion was impaired; his nights were often very disturbed; and during the night he had frequently a feeling of dyspnœa, which obliged him to sit up in bed. A variety of treatment was employed for months, with little or no benefit; he fell off greatly in flesh and strength; some œdema appeared in his legs; and, upon the whole, the case assumed such an aspect, that I watched it with much anxiety, and had long ceased to consider it as sympathetic. At length, however, about a year after the commencement of the disorder, it disappeared spontaneously, and rather suddenly. The patient has now enjoyed good health for more than two years, and circumstances have come to my knowledge, which induce me to believe that the source of the affection had been continued anxiety of mind. This gentleman had been liable to gout; but he had some slight attacks of it during the continuance of these symptoms, without relieving them; and there was no gout connected with their final disappearance.

A gentleman has frequently consulted me, who is affected in the following manner: In an instant, and without any warning, he is seized with a most painful feeling in the region of the heart, accompanied by great anxiety and oppression across the thorax; and his pulse becomes feeble and very rapid. There is no dyspnœa, but on the contrary he attempts to relieve his uneasi-

ness by frequent and very deep inspirations, which are performed without difficulty. While the lungs are in the state of full inspiration, a sound is heard by himself and by persons sitting near him, exactly resembling the loud tick of a watch; it corresponds in frequency with the pulse, and is only heard while the lungs are fully inflated; but it continues to be heard as long as he keeps them inflated, by resting upon a deep inspiration. The attack generally continues from 15 minutes to half an hour, and then passes off in an instant, with a feeling of some obstruction suddenly giving way; every uneasy sensation is then instantly removed, and the pulse becomes full, soft, regular, and of the natural frequency. This affection was originally brought on by intense anxiety of mind nearly 30 years ago; it has continued to recur since that time, but at very uncertain intervals, often of weeks or months, and has never produced any injurious effects upon his general health.

It is unnecessary to enter into any general detail of the various sympathetic affections, which, in connection with disorders of the stomach, appear in other organs, particularly in the head, as these are familiar to every practical man; but I shall conclude this part of the subject with a short account of the following affection, which seems to be one of very rare occurrence.

A gentleman, aged about 50, liable to delicate health and impaired digestion, about four years ago began to be affected in the following manner:—At various times of the day, and without any warning, he was suddenly seized with an uneasy feeling in the epigastric region, accompanied by a violent and very loud sound, as if from the belching of wind. At the same instant that this sound took place, he was seized with a violent pain in some part of the lower extremities, generally on the inside of the thigh, a little above the knee. This was accom-

panied by a convulsive start of the limb, and the pain for the time was so acute, that he generally at the instant of the seizure, grasped the part with both his hands by a kind of involuntary or convulsive effort. The whole was the work of a moment, and passed off as suddenly, leaving only a kind of soreness about the knee, which was relieved by friction. These paroxysms occurred many times in the day, and, in the night, he had frequent starting of his limbs. His digestion was bad; the bowels were confined, and the motions were dark and unhealthy. At one time during the continuance of the complaint, his limbs became considerably weakened, so as to assume the appearance of a slight degree of paraplegia; but nothing could be discovered about the spine, and the limbs after sometime recovered their strength. The affection has continued to recur from time to time, though it is very much diminished, both in frequency and in violence. The only treatment that appeared to have any influence over it was regular moderate purging, alternated with opiates.

The imperfect outline which has now been given of affections of the stomach, will serve to show the extent and importance of the subject, and the necessity which there is for constantly attempting a more correct diagnosis of this class of diseases. Some of them appear to be merely functional, or what may properly be called dyspeptic; while others are connected with most important and defined diseases of the mucous membrane, or the other coats of the stomach; and it appears that many of these cases, though of a very formidable nature, may be treated with success, if their characters are ascertained, and the necessary means adopted, at an early period of the disease. Other cases will be afterwards mentioned, which are connected with corresponding diseases of the mucous membrane

of the bowels, or the affections of the neighbouring organs. It appears to me that some late writers have confounded a variety of these diseases under the vague and undefined use of the term dyspepsia, supposed to exist in different forms and different degrees; and, in this manner, have introduced much ambiguity into the inquiry. Thus, when we find these writers talking of a stage of dyspepsia in which it terminates by ulceration, or various organic affections of the parts concerned, I cannot avoid considering them as using a phraseology which is at variance with the principles of sound investigation, and calculated to obscure a subject of the utmost practical importance.

APPENDIX

TO THE

PATHOLOGY OF THE STOMACH.

In this appendix I mean to introduce a few observations on the following subjects, closely allied to the pathology of the stomach, though not connected with disease of that organ itself.

1. Derangement of the functions of the stomach by tumours attached to it externally, without disease of its coats.
2. Outline of the pathology of the œsophagus.
3. Outline of the pathology of the duodenum.

SECTION I.

DERANGEMENT OF THE FUNCTIONS OF THE STOMACH BY TUMOURS ATTACHED TO IT EXTERNALLY, WITHOUT DISEASE OF ITS COATS.

Of the singular phenomena connected with some of the affections of this class, I shall only give the following example:

Case XXII.—A lady, aged about 70, had been affected for more than thirty years with periodical vomiting, which occurred so regularly a few hours after meals, that during the whole of this period, she had vomited a part of almost every meal. It was brought up without nausea, or any unpleasant effort, and the affection had never injured her general health. I was in the habit of seeing her for several years, during which time she continued to enjoy good health, till she began to fall off rather suddenly, and died after a short illness with diarrhœa and rapid failure of strength.

Inspection.—The only morbid appearance that could be discovered, was a tumour the size of a hazel nut or a very small walnut, and resembling an enlarged gland. It lay in contact with the outside of the stomach, near the pylorus, and slightly attached to its outer coat, but without any appearance of disease in the stomach itself.

In a similar case by Morgagni, in which the symptoms had gone on for 24 years, the only morbid appearance was a slight induration of the pancreas. I have seen one case which was fatal in about a year, with constant vomiting, in which the only morbid appearance was a scirrhous hardness of the pancreas, without enlargement; and I have seen several in which the pancreas was enlarged and diseased in various ways. Similar symptoms may also arise from diseases of the other neighbouring parts, as the liver, the spleen, and the omentum. Many years ago, I examined the body of a woman who died gradually exhausted by daily vomiting, which had continued more than a year, and I could discover no morbid appearance except the gall bladder distended by a large number of biliary calculi, which completely filled it. In the Philadelphia Journal of Medical Science, a case is mentioned, in which the symptoms of deep-seated disease in the stomach were

connected with a tumour attached to the œsophagus at the third, fourth, and fifth dorsal vertebræ. The patient had gnawing pain in the stomach, much flatulency, emaciation, and frequent vomiting; and he died after a protracted illness. The stomach and all the abdominal viscera were sound.

SECTION II.

DISEASES OF THE ŒSOPHAGUS.

§ I.—Inflammation of the œsophagus.

Case. XXIII.—A gentleman, aged 26, came to town in June 1826, to consult me about complaints in his head. On his journey he thought he caught cold in crossing the Frith of Forth, and, when I saw him, he complained of his throat, and there was a glandular swelling on the right side of his neck. His voice was hoarse, with a peculiar husky sound. The fauces were of a bright red colour without much swelling, but were covered in several places with aphthous crusts. He was at this time not confined, and there was no fever; but, after a few days, he became feverish, the other symptoms continuing as before. He was now confined to bed and actively treated, and after eight or nine days he was much better, so as to be able to be out of bed; but there was still some rawness of the throat, with small aphthous crusts, and a husky sound of the voice. After a few days, there was a

recurrence of fever which now assumed a typhoid type, with considerable appearance of exhaustion. He had some dyspnœa, with considerable difficulty of swallowing. The attempts to swallow excited sometimes cough, and sometimes vomiting; and by both were brought up considerable quantities of a soft membranous substance. He became more and more exhausted, without any remarkable change in the symptoms, and died at the end of about three weeks from the first appearance of the disease. For twelve hours or more before his death, he swallowed pretty freely.

Inspection.—The whole of the pharynx was covered by a loose soft adventitious membrane, which also extended over the epiglottis; and portions of it were found lying in small irregular masses, within the larynx, at the upper part. A similar membrane was traced through the whole extent of the inner surface of the œsophagus, quite to the cardia. Near the cardia, it lay slightly attached, forming a soft continuous mass about a third of an inch in diameter, and with the œsophagus closely contracted around it. The other parts were healthy.

§ II. Pathology of dysphagia.

The subject of dysphagia has been so fully treated by various writers, particularly Dr. Monro, that it is not necessary to introduce more than a slight outline of it in connexion with these investigations. The causes of dysphagia, in as far as I have had occasion to observe them in practice, are chiefly the following,

1. Enlargement of the epiglottis and disease of the larynx. These affections are generally distinguished

by cough and difficult breathing, but these are often slight or scarcely observed; and I have seen several cases in which the dysphagia was the prominent symptom, so as to lead to the supposition of disease of the œsophagus rather than of the trachea. In one of these cases, the epiglottis was thickened and much elongated; the patient had no constant difficulty of swallowing, but was liable to sudden attacks of it during his meals, which threatened instant suffocation. In another case, the dysphagia was permanent, and was combined with a hoarse husky cough and slight dyspnœa. The whole body of the larynx was much enlarged and thickened; and it was in some degree ulcerated both internally and towards the œsophagus. In both cases, the œsophagus was entirely healthy.

2. Paralysis of the œsophagus, generally connected with disease of the brain or spinal cord. Of this I have given some remarkable examples in a treatise on the Pathology of the Brain, and one in particular, in which the patient was entirely supported by nourishment introduced through an elastic gum tube, for five weeks before his death. Dr. Monro has described several remarkable cases, in which complete loss of the power of the œsophagus seemed to take place without any other disease. The peculiar character of the affection was a sudden and complete loss of the power of swallowing, while a full-sized probang could be passed without any difficulty. The cases in general got well in a short time; and several of them seemed to derive remarkable benefit from electricity. One of the patients could not for some time swallow at all except when he was seated on the electrical stool.

3. The simple stricture of the œsophagus, which consists of a contraction of small extent at a particular spot, generally connected with thickening of the mucous membrane at the part, without disease of the other coats.

4. Contraction with more extensive disease, as thickening and induration of the coats of the œsophagus, often of great extent, and frequently combined with ulceration of its inner surface, which sometimes assumes a cancerous character. Stricture, referable both to this and the preceding heads, may take place gradually without any known cause, or they may be distinctly traced to a cause which produced inflammation or other injury of the parts. A case occurred lately to Dr. Renton of Pennycuick, in which nearly total obliteration of a considerable extent of the œsophagus followed an injury produced by swallowing a preparation of potass.

5. Tumours external to the œsophagus, formed by enlargement of the bronchial glands, or the glands in the posterior mediastinum.

6. Polypous tumours, growing from the inner surface of the œsophagus itself. Some remarkable examples of this are related by Dr. Monro.

7. Collections of matter behind the œsophagus, or betwixt its coats, and forming a tumour projecting into its cavity. These sometimes attain a great size, and continue for a considerable time before the nature of them is ascertained ; and even after the matter has been discharged, it is very often collected again. I have seen several examples of this in the upper part of the œsophagus, so situated that they could be reached by the point of the finger and opened by a curved instrument. They all did well, but from the quantity of matter discharged from one of them, the disease must have been of immense extent. The breathing was much affected in this case, and swallowing was almost impossible. A remarkable case occurred to Mr. George Bell, in which the dysphagia had existed so long that it was considered as an example of stricture of the œsophagus, and a probang was introduced. When this reached the part which was very low down, it ruptured

the abscess, and an immense discharge of matter took place, with immediate and permanent relief.

8. Aneurism of the aorta. I have seen several examples of this affection, and the symptoms had not been such as to excite any apprehension of the disease, until the fatal event took place by rupture into the œsophagus. I have described one remarkable case in which the fatal attack was complicated with ramollissement of the spinal cord. In another, a gentleman, in the vigour of life, had been complaining for a few weeks of difficulty of swallowing, which on some days was considerable, so as to oblige him to stop in the middle of a meal, and on other days was almost gone. There was no other symptom, and in the morning of the day on which he died, he ate his breakfast well, and swallowed without difficulty. In less than an hour after he was seized with copious vomiting of blood, and died in two hours. Another case has been related to me, in which a probang was passed, under the idea of stricture of the œsophagus; it occasioned rupture of the aneurism, and almost immediate death.

9. Disease of the Cardia. This has been already briefly referred to.

10. Dysphagia appears to exist, assuming all the characters of a fixed disease of the œsophagus but really connected with a morbid irritability, or some degree of inflammatory action, of a part of its mucous membrane. This is, probably, the affection which has been called spasmodic stricture of the œsophagus; but the indefinite doctrine of spasm will certainly not account for it. My attention was first particularly drawn to the disease by the case of a lady 40 years of age, who had been under treatment more than a year, for what was considered a stricture of the œsophagus, accompanied by all its usual symptoms. Various courses of medicine and the frequent use of bougies had been employed without benefit. I scarcely know what induced me to

propose, instead of the bougies, an egg-shaped silver ball, attached to a handle of silver wire, to be passed occasionally through the stricture, which felt to be at the distance of about four inches below the pharynx. To my astonishment, the affection was completely removed, by four or five applications of this instrument. The patient continued well for more than a year, and then had a return of the complaint, which was removed in the same manner; and she had afterwards several slight returns of it, which always yielded readily. The attacks of the affection were generally ascribed to cold, and were preceded by some degree of tenderness of the pharynx, and a feeling of rawness and tenderness a short way down the œsophagus. I have no doubt that they depended upon a superficial disease of the mucous membrane, at a particular spot; but the precise nature of it I cannot determine; and I confess myself unable to explain the speedy removal of the complaint, by the means which I have mentioned, especially in the first attack, when it had continued for more than a year, with all the characters of a severe and permanent stricture. For numerous interesting facts relating to what has been called the spasmodic stricture of the œsophagus, as well as to the whole subject of dysphagia, I refer to the learned work of Dr. Monro.*

* Morbid Anatomy of the Gullet, Stomach, and Intestines.

SECTION III.

DISEASES OF THE DUODENUM.

Facts are wanting on this interesting subject, but it is probable the duodenum is the seat of several affections, which are apt to be mistaken for affections of the stomach or the liver. The leading peculiarity of disease of the duodenum, as far as we are at present acquainted with it, seems to be, that the food is taken with relish, and the first stage of digestion is not impeded ; but that pain begins about the time when the food is passing out of the stomach, or from two to four hours after a meal. The pain then continues, often with great severity, sometimes for several hours, and generally extends obliquely backwards in the direction of the right kidney. In some cases, it gradually subsides after several hours, and, in others, is relieved by vomiting.

The peculiar characters of disease of the duodenum are well illustrated by a case related by Dr. Irvine, in the Medical Journal of Philadelphia for August, 1824. The patient was liable to attacks of pain and vomiting, which at first occurred at long intervals, but gradually became more frequent, until they occurred regularly every day. His appetite was good, and the functions of his stomach were unimpaired for two, three, or four hours after a meal. He was then seized with violent pain, followed by vomiting, and the pain did not cease till the stomach was completely emptied. He died gradually exhausted, in about six months from the time

when the attacks began to occur daily. About three weeks before his death, a tumour was felt in the right hypochondrium, which after eight or ten days subsided. On inspection, the stomach was found distended but healthy, and the liver was sound. The duodenum was enlarged and hardened, and internally showed an extensive surface of ragged ulceration. It was also studded with tubercles, varying in size from that of a hickory nut to a hazel nut. In the largest there was a soft white matter, and the cavity of the duodenum contained about four ounces of pus.

In a case by Broussais, the symptoms seem to have been very obscure, or rather are slightly detailed. A man, 63 years of age, had suffered much from dyspeptic symptoms, which were alleviated by a careful diet. He underwent amputation of the arm, after which he had pain in the epigastric region with a feeling of pulsation. On the tenth day after the operation, he was seized with coldness, paleness, and convulsive movements, and soon died. The intestinal canal was full of blood; in the first portion of the duodenum, there was an ulcer which had formed a communication with the hepatic artery.*

Ulceration of the duodenum may also be fatal by perforation and rapid peritonitis, in the same manner as we have seen in regard to the corresponding affection of the stomach. There is a preparation of this kind in the Museum of the Royal College of Surgeons of Edinburgh, but no account is given of the case, except that it was fatal in twenty-four hours, with symptoms of enteritis; these of course occurred after the perforation had taken place. A very interesting case has been described by M. Roberts.† A man, aged twenty-seven, had complained for some months of wandering pains in the epigastric region. For the last six weeks there had

* Broussais sur la Duodenite Chronique.
† Nouvelle Bibl. Medicale, Juin. 1828.

been diarrhœa, and for six days preceding the following attack, he had complained of nausea and loss of appetite. On 10th December, 1827, three hours after dinner, he was suddenly seized with excruciating pain in the epigastric region, which soon spread over the abdomen, and he died in extreme agony in about twenty hours. There were the usual marks of extensive peritonitis, and the cavity of the peritoneum contained much gas, and a considerable quantity of fluid. The stomach was healthy; but, in the duodenum, near its origin, there was an oval ulcer three or four lines in diameter, with rounded edges, and so deep that it seemed to have been bounded merely by the peritoneal covering of the part; this had given way by a small opening about a line in diameter. Near this ulcer there was another about the same size, but less deep, affecting only the mucous membrane.

In concluding this imperfect outline of the pathology of the stomach, and the parts immediately connected with it, I add the following observations as possessing considerable interest in a practical point of view.

A gentleman from the country consulted Dr. Kellie and myself, in regard to a tumour in the epigastric region, of about a year's standing; and the commencement of it was dated from a violent exertion in lifting some heavy body. The tumour was large, flat, and firm, and free from pain or tenderness. On first inspection, it had the appearance of a mass of organic disease of great extent; but, when we considered that his health was good, and the functions of the stomach little impaired, we departed from this opinion, and were disposed to believe that it might be formed in the parietes. After repeated examinations, we were prepared

to send him home with general instructions, when, on making a final examination, Dr. Kellie perceived in the tumour an obscure feeling of crepitus. Following this indication, persevering pressure was now employed, and the tumour gradually disappeared. It was distinctly a hernia, but what the contents of it were, we cannot decide.

A lady from the country consulted me respecting paroxysms of pain in the epigastric region, accompanied by vomiting, to which she was liable at short but uncertain intervals; and they had very much impaired her general health. After repeated examinations, I could detect no organic disease; but at last, by mere accident, discovered a minute opening through the abdominal parietes, about half way betwixt the ensiform cartilage and the umbilicus. It felt scarcely larger than the mouth of a large pencil case, and was covered only by a thin integument. There was every ground for considering it as the aperture of a small hernia, though the patient had never observed any protrusion at the part; and, by adapting to it a light and slender truss, the paroxysms were prevented.

PATHOLOGY

OF THE

INTESTINAL CANAL.

In attempting to trace the pathology of the intestinal canal, we have to keep in mind the three distinct structures of which it is composed, namely, the peritoneal, the muscular, and the mucous coats. These structures perform separate functions, and are liable to be the distinct seats of disease. One of the most interesting points in this investigation, is to trace the different classes of symptoms which arise from or are connected with these varieties of structure. This I think we are enabled to do with some degree of accuracy, by tracing, in other parts of the body, in which the three structures are more distinct from one another, the leading phenomena connected with the diseases of each. Thus, from ample observation, we have reason to believe, that the most frequent result of inflammation, in a serous membrane, is deposition of false membrane,—in a mucous membrane, ulceration,—and in a muscular part, gangrene. There are various modifications of these terminations, but these now mentioned are the

most prominent, and the most peculiar to the different structures. When, therefore, in a fatal disease of the intestinal canal, we find ulceration of the internal surface, we have reason to conclude that the disease has been seated chiefly in the mucous membrane; when we find only false membrane, that it has been in the peritoneum; when we find gangrene, that the muscular coat had been affected; and when we find both gangrene and false membrane, that both the muscular and peritoneal coats were involved in the disease.

In tracing the symptoms connected with inflammatory affections of the abdomen, we find them resolving themselves into three most important modifications. Thus, we meet with inflammation existing in the intestinal canal, with a perfectly natural state of the bowels,—with a loose state of them,—and with a state of insuperable obstruction. In the progress of this investigation, we shall see reason to believe, that these three states of disease, so different from each other, are connected with three distinct varieties, in the seat of the inflammation; that, when it is seated in the mucous membrane, there is an irritable state of the bowels assuming the characters of untractable diarrhœa or dysentery; that, when the muscular coat is affected, there is obstruction of the bowels; and that inflammation may exist in the peritoneal coat alone, and go on to a fatal termination, while the functions of the bowels continue in a perfectly natural state, through the whole course of the disease. It is necessary to anticipate these results, in connection with the arrangement of this extensive subject. But, besides the various forms of inflammatory affections of the intestinal canal, there is a class of diseases entirely distinct, namely, that which affects it simply as a muscular organ. This includes the various modifications of Ileus, which, though it very often terminates by inflammation

and its consequences, is in its early stages to be considered as a disease of the canal, affecting chiefly its muscular action. The investigation of the pathology of the intestinal canal might, therefore, divide itself into diseases affecting it as a muscular organ, including the varieties of Ileus,—and the inflammatory diseases under three classes; namely, 1st, Simple Peritonitis, without any derangement of the muscular action of the bowels,—2d, Peritonitis combined with obstruction of the bowels, constituting the disease commonly called Enteritis,—3d, Inflammation of the mucous membrane.

This is perhaps the correct pathological division of the subject, but I think it will answer the purposes of practical utility to consider peritonitis and enteritis together, and the diseases of the mucous membrane separately. On this plan, the actual division of the subject will be,

I. Ileus.

II. The inflammatory affections of the more external parts, including peritonitis and enteritis.

III. The diseases of the mucous membrane.

The principal organic affections, and the various forms of chronic disease of the intestinal canal, are so connected with one or other of these classes, that the consideration of them must be very much combined.

PART I.

OF ILEUS.

Colic and Ileus are different degrees or different stages of the same affection, and the name, therefore, may apply to both. The symptoms, in the early stages, are pain of the bowels, chiefly twisting with great severity round the umbilicus, obstinate costiveness, and generally vomiting; but without fever, and commonly at first without tenderness,—the pain, on the contrary, being rather relieved by pressure. As the disease advances, and if no relief be obtained, the abdomen becomes tense, tender, and tympanitic; the vomiting very often becomes stercoracious, with severe tormina, intense suffering and rapid failure of strength. In this manner, the disease may be fatal without inflammation, or, at an advanced period, it may pass into inflammation, and be fatal by extensive gangrene.

The first part of our inquiry is to investigate the conditions of the affected parts in the various degrees and stages of this disease. In a pathological point of view, it resolves itself into three leading modifications,

1. Simple Ileus without any previous disease.

2. Ileus with previous disease of such a nature that it acts by deranging the muscular power without mechanical obstruction.
3. Ileus with mechanical obstruction.

SECTION I.

OF SIMPLE ILEUS.

§ I.—Ileus fatal in the state of distention without inflammation.

Case XXIV.—A man, aged 40, 20th August 1814, had violent pain of the abdomen, urgent vomiting, and costiveness. The pain was at times increased by pressure, but not uniformly so; his pulse was generally about 96, but at last rose to 120. The attack had commenced with symptoms resembling cholera, which had speedily passed into those of ileus. Repeated bloodletting and the other usual means were actively employed, and his bowels were moved on the 29th, but without relief. I saw him on the 30th. His abdomen was then distended, tense, and tympanitic; his strength was rapidly sinking; and he died the same afternoon. For some time before this attack, he had been affected with symptoms which had been referred to the liver.

Inspection.—A large portion of the small intestine was in a state of great and uniform distention, without any appearance of inflammation. The lower part of the right lobe of the liver was unusually soft. No other morbid appearance could be discovered on the most careful examination.

In the symptoms of this case at its commencement, there was a complication which, perhaps, may remove it in some degree from the correct history of ileus; though the fact of cholera passing into ileus is by no means uncommon, and the fatal symptoms were simply those of ileus. The following, perhaps, was a more decided example, and showed the affected parts in the state of high distention, with a slight and recent blush of redness, not amounting to inflammation, or, at least, not to such a state of it as could be considered the fatal disease.

Case XXV.—A woman, aged 20, 23d June, 1813, was affected with violent pain at the upper part of the abdomen, extending towards the left side, and at times increased by pressure; frequent and violent vomiting, and obstinate costiveness. The belly was distended and tense; the tongue white; pulse 76, and small. On the 16th, she had got wet during the flow of the catamenia, which ceased, but returned at night; pain about the umbilicus began on the 17th, and increased gradually; vomiting began on the 21st, with hiccup. Bloodletting, with various purgatives, injections, warm bath, &c. were actively employed by a physician of eminence.

(24th.) Incessant screaming from the violence of pain; frequent hiccup; no stool; pulse 88, and small; frequent vomiting; belly distended and tender; every medicine was instantly vomited.

(25th.) No stool; every thing vomited; pain almost gone; pulse very feeble.

(26th.) No stool; free from pain; vomiting continued with hiccup. Died in the night.

Inspection.—The whole of the colon, and about twelve inches of the lower extremity of the ileum were empty, contracted, of a white colour, and seemed perfectly healthy. The remainder of the small intestine was distended to the greatest degree, so as to appear

thin and transparent; its contents were chiefly watery matter and air. On the surface of the distended intestine, there was on several places, especially at the lower part near the contracted portion, a superficial blush of vivid redness, but without any appearance of exudation. There was a small abscess in the left ovarium. All the other parts were healthy.

A remarkable feature in this case is the mode of its termination, namely, by rapid sinking and cessation of pain, resembling the symptoms of internal gangrene, yet with the inflammatory appearance in its earliest stage. It is also to be observed, that the pain was increased by pressure as early as the 23d, when we can scarcely suppose any inflammation to have existed; and the same happened in the former case, where there was no appearance of inflammation.

§ II.—Ileus fatal with distention, and a dark livid colour of the parts without disorganization.

Case XXVI.—A lady, aged 70, after her bowels had been confined for several days, was seized on the 5th January, 1820, with violent pain of the abdomen and vomiting; pulse natural. The usual means were employed by Mr. White without relief. On the 6th, the pain was considerably abated, but there was severe sickness, with frequent vomiting, and obstinate costiveness; the pulse from 80 to 90. The belly was natural to the feel, and without any degree of tenderness. On the 7th, the same symptoms continued; the pulse 80. Towards the afternoon, sinking began to take place, and she died in the night.

Inspection. The colon contained a great deal of hardened feces, but appeared quite healthy and without

any flatulent distention. The lower extremity of the ileum, to the extent of 18 inches, was empty, contracted, and of a white colour, like the intestine of an infant; immediately above this, a portion from 18 to 24 inches in extent was throughout of a dark livid brown colour, or nearly black, but without disorganization or softening, and without any appearance of exudation. This portion was considerably distended, and the whole of the remaining part of the small intestine to the very commencement of the canal was in a state of uniform and great distention, and of a dull leaden colour, with here and there portions of a dark livid brown. It contained only thin fluid feces and air. There was considerable disease of the internal surface of the abdominal aorta. The other parts were healthy.

The part chiefly affected in this case would appear to have been in an intermediate stage of that condition which passes into gangrene; and, it is worthy of observation, that it was without any appearance of inflammatory exudation.

§ III.—Ileus fatal by gangrene without exudation.

Case XXVII.—A boy, aged 12, (26th Oct. 1818) was affected with violent pain of the belly, chiefly round the umbilicus, urgent vomiting, and costiveness for two days; abdomen distended, pulse 50. Various remedies were employed without benefit. On the 27th, the pulse rose to 120, with increase of the pain, tension and tenderness of the abdomen. Bloodletting was used in the morning, and again at three P. M., after which the pulse fell to 112. The other usual means were employed without procuring any evacuation from

the bowels; the pain continued unabated; sinking took place, with coldness of the body; and he died between 7 & 8 o'clock in the evening, having continued in violent pain until immediately before death. I did not see this case during the life of the patient, but was present at the examination of the body.

Inspection.—The stomach was healthy; the small intestine was a little distended and slightly inflamed, especially at the lower part where it had contracted some adhesions. The whole right side of the colon was in a state of gangrene, especially the caput cœcum, which had burst and discharged into the cavity of the peritoneum a large quantity of fluid feces. The diseased parts appeared to have been much distended, and, after being emptied by the rupture, had not contracted, but had fallen flat, presenting a very broad surface like an empty bag. There was no imflammatory exudation; and, at the upper part of the ascending colon, this diseased part terminated at once in healthy intestine, which was white, collapsed and empty. This was the state of the remainder of the colon, except the sigmoid flexure, which, with the rectum, contained much consistent feces.

§ IV.—Ileus fatal by gangrene combined with exudation.

Case XXVIII.—A young man, aged 19, (17th Oct. 1813) was affected with violent pain round the umbilicus; incessant vomiting; abdomen hard, tense, and tumid; bowels obstinately costive; pulse 84; countenance depressed and anxious. He had been ill six days, during which a variety of remedies had been employed without relief. He was now treated by repeated general and topical bleeding, blistering, various pur-

gatives, purgative and tobacco injections, and all the other usual remedies, but without any permanent relief. On the 18th, the pulse was 120, and the belly tympanitic; the vomiting was urgent, but not feculent, and there was some slight feculent discharge by the injections. On the 19th, the symptoms were somewhat abated; but, on the 20th, they again increased; the pain violent, the vomiting incessant, the belly much distended; the pulse from 92 to 96; slight discharge of watery matter by stool. He died on the 21st.

Inspection. The stomach was healthy. Almost immediately below it, the intestine was distended to the greatest degree. It was in some places thin and transparent; in others, highly inflamed and gangrenous, and bursting when handled; and in others firm though perfectly black. This state continued to the middle of the small intestine, where a portion, twelve inches in length, was empty, contracted, and healthy. Below this, the canal was again diseased as in the parts above, distended, inflamed, gangrenous, and adhering by extensive exudation, until three inches from the extremity of the ileum, where it became again contracted, empty, and of a healthy colour. These contracted portions were quite pervious, easily dilated, and, in their coats, appeared perfectly healthy. The colon was healthy and collapsed, except at its lower part, where it contained some consistent feces. The distended portions of intestine were chiefly filled by air; there was in some places thin feculent matter, but in small quantity; and no consistent feces could be found in any part of it.

SECTION II.

ILEUS FATAL WITH PREVIOUS DISEASE OF SUCH A NATURE, THAT IT SEEMED TO ACT BY DERANGING THE MUSCULAR POWER WITHOUT MECHANICAL OBSTRUCTION.

§ I.—OLD ADHESION OF THE INTESTINE OF SMALL EXTENT.

CASE XXIX.—A gentleman, aged 17, had been for a considerable time liable to attacks of vomiting, accompanied by a very constipated state of the bowels; but, in the intervals, he enjoyed good health. On the 26th July 1822, he had vomiting, with pain in the left side of the abdomen; pulse 100; bowels open. He was bled by Mr. Newbigging with relief; and on the 27th and 28th, he was free from complaint,—his bowels open, and his pulse natural. On the evening of the 29th, he was seized with vomiting and pain of the abdomen,—pulse natural, bowels confined. (30th.) Vomiting of almost every thing that was taken; occasional attacks of pain in the abdomen; pulse natural; bowels confined. I saw him on the morning of the 31st. His face was then cadaverous, and exhausted,—body cold; pulse extremely feeble; severe pain in the abdomen, increased by pressure; urgent vomiting; no stool. He died at four in the afternoon.

Inspection.—The small intestines were uniformly distended, and had a blush of redness. From the caput coli, the extremity of the ileum took a turn downwards into the pelvis, and adhered to the parietes of the pelvis by an attachment of old standing for several inches,

without any contraction of its area. The ileum beyond this part to the extent of from 20 to 24 inches, was highly inflamed and gangrenous, with extensive recent adhesions.

Case XXX.—A gentleman, aged 24, had been for several years liable to attacks of pain in the abdomen, affecting chiefly the right side. They usually continued for several hours; sometimes they returned every evening for weeks together; and sometimes he was for weeks or months perfectly free from them. One of his longest intervals was ascribed to taking daily a small dose of Epsom salt. On the 11th of June 1818, he was seized with violent pain across the lower part of the abdomen, which was drawn into balls,—pulse 60; no vomiting. He was seen by Mr. White, who gave him an opiate and a purgative, with relief, and his bowels were freely moved. On the 12th, he was free from complaint; and on the 13ht, he walked out, but, at night, the pain returned with violence; pulse 60. At four in the morning of the 14th, the pain continuing unabated, and his pulse having risen, he was bled, and his bowels were moved by injections; at nine, he was found pale, cold, and exhausted; belly tympanitic, and the pain continuing severe. He died at two in the afternoon. I saw him only two hours before death.

Inspection. The small intestine was greatly distended, and, on many places, especially on the ileum, there were inflamed portions with exudation of false membrane, and other parts of a dark colour, approaching to gangrene. The right side of the colon was singularly turned upwards upon itself, so that the surface of the caput cœcum was in contact with the surface of the ascending colon immediately above it, and was attached to it, for about two inches, by a very firm adhesion of old standing. The parts concerned in it did not

appear to be thickened, and the colon and caput cœcum were in other respects quite healthy.

§ II.—Old adhesion of the parts concerned in a hernia.

Case XXXI.—A man, aged 63, had been for 40 years affected with double inguinal hernia, easily reducible; and he was liable to violent paroxysms of pain in the abdomen, during which he said the herniæ were generally forced out. In November 1812, he suffered one of these attacks, more severe and longer continued than usual. During this attack the herniæ had protruded frequently, but he always reduced them with ease, till the morning of the 29th, when he failed. They were easily reduced by a gentleman who then saw him, but, at night, when I saw him, they had again protruded; they were then also easily reduced, but protruded again almost immediately, though he was lying on his back; he had some vomiting and violent pain in the abdomen, which was hard and tender; pulse 120, feeble, and irregular; features collapsed. The bowels had been moved by injections. He died at night.

Inspection. Both herniæ were completely reduced, and without any adhesion to the sacs, the mouths of which were large and free. The sacs were thickened, and the inner surface of that on the left side was inflamed and sloughy. The small intestine, down to the middle of the ileum, was greatly distended, and in many places inflamed and gangrenous. The disease stopped at the part of the ileum, which had formed the hernia of the right side; the surfaces of this portion, where they had been in contact in the hernia, were firmly attached to each other, by an old adhesion about three

inches in extent. The coats of the intestine at this place appeared slightly thickened, but scarcely produced any sensible diminution of its area.

§ III.—A slender band of adhesion betwixt two contiguous portions of intestine.

Case XXXII.—A boy, aged 8, had frequent vomiting and obstinate costiveness; belly swelled and tympanitic; countenance exhausted; pulse frequent and feeble. He had been ill 10 or 12 days, during which the complaint had resisted every remedy; and he died in two days more.

Inspection. The small intestine was distended to the greatest degree, down to a point on the ileum, where the following cause of the disease was discovered. Betwixt two turns of intestine, there was a narrow band of adhesion, rather more than an inch in length. It was evidently of long standing, and, while the parts had remained contiguous, had produced no effect; but, by some relative change of situation of the parts, another turn of intestine had insinuated itself betwixt the two adhering portions. This portion, however, was healthy. The origin of the disease seemed to be, the band of adhesion being thus put upon the stretch, so that the peristaltic motion had been interrupted; for at the lower attachment of the band, the intestine was drawn aside into puckers, and, precisely at this point, the distention ceased, and the canal became white, collapsed and empty. At this part, however, there was no actual obstruction, and the coats of the intestine were perfectly healthy, except a circumscribed redness on its inner surface, at the point corresponding to the attachment of the band of adhesion. On the distended portion of

intestine, there was a slight appearance of superficial inflammation, but it was of small extent and appeared to be quite recent.

§ IV.—Singular twisting of the sigmoid flexure upon itself.

Case XXXIII.—A man, aged 60, (23d April, 1815,) had been ill for a week, with the usual symptoms of ileus, which had resisted all the ordinary remedies; he was now much exhausted; and his belly was enlarged and tympanitic, with frequent vomiting. He lived in great distress till the 28th, and the swelling of the abdomen progressively increased, until it resembled the abdomen of a woman at the most advanced period of pregnancy; yet to the last he could bear pressure upon every part of it; his pulse varied from 108 to 116.

Inspection.—On opening the abdomen, a viscus came into view, which at first appeared to be the stomach enlarged to three or four times its natural size. On more accurate examination, however, this turned out to be the sigmoid flexure of the colon, in such a state of distention that it rose up into the region of the stomach, and filled half the abdomen. The stomach was contracted and healthy. The small intestine was healthy at the upper part; lower down, it became distended and of a dark colour; and, at the lowest part, it was much distended, with some spots of gangrene. The colon was greatly distended, being in some places not less than five or six inches in diameter; and the sigmoid flexure was also enormously enlarged in the manner already mentioned, and of a dark livid colour; it contained only air and thin feces. The rectum was collapsed and healthy. The following appeared to be

the cause of this remarkable state of disease. The sigmoid flexure was found to have taken a singular turn upon itself, so that what is naturally its right side lay to the left, in contact with the descending colon; and the left or ascending portion of it passed in front of this portion, and lay on the right. In consequence of this transposition, the rectum, as it descended from the former, namely, what was now on the left side, passed behind the lower curve of the sigmoid flexure, where it takes the first turn from the descending colon; and the rectum itself at this part received a twist, as if half round. Exactly at the point where this twist had taken place, the distention and dark colour of the diseased intestine terminated abruptly, and the remainder of the gut became white and collapsed. At this point, however, there was no mechanical obstruction, for the part was quite pervious, and, excepting the slight twist, perfectly healthy.

In this singular case also, I had an opportunity of ascertaining the state of the part during life. For on the 25th, three days before the man's death, having exhausted all the usual means, I was induced to examine the rectum with a large ivory-headed probang; when I found, at a certain depth, which was afterwards seen to correspond with the point where the rectum was twisted, a very slight obstruction to the passage of the instrument, which however passed with very little difficulty, and was withdrawn without any. A piece of the intestine of an animal, tied at the end, was now carried up beyond this point, and filled, by forcibly injecting water into it. This was retained for some time in the distended state, and then slowly withdrawn; but no discharge followed, though, as I have already stated, the distended intestine contained only air and fluid feces.

§ V.—Ligamentous band confining a portion of intestine to the mouth of a hernial sac.

Case XXXIV.—A man, aged 53, May, 1814, was affected with vomiting and uneasiness in the bowels, which seized him in the following manner. The attack commenced with a feeling of commotion, or, as he termed it, "a working," which began at the lower part of the belly, towards the left side; it moved gradually upwards, till it reached the stomach, and then he vomited almost every thing he had taken since the last attack. He was affected in this manner, at uncertain intervals, several times a-day, and the complaint had continued about a fortnight. He had been for fifteen years affected with a small hernia of the left side, which often came down, but was easily reduced. He had never used a truss until a few weeks before I saw him. From that time his hernea had never appeared, but very soon after he applied the truss the above mentioned complaint began. There was no fixed pain in the belly; his pulse was natural; his bowels were confined, but motions were procured by medicine. For a month after I saw him first, he continued to attend to his work. He was then confined to his house, and soon after to bed, with increasing debility and emaciation; and he had frequently violent paroxysms of pain in the abdomen. The other symptoms continued as before. His hernia never appeared; the pulse was natural; evacuation from the bowels was procured by medicine. He died of gradual exhaustion, about ten weeks from the commencement of the vomiting.

Inspection.—The hernia was found to have been femoral; a portion of the sigmoid flexure of the colon adhered to the mouth of the sac, and a fine ligamentous

band, connected by both its extremities to the mouth of the sac, surrounded the intestine at this spot, but without producing any diminution of its area; and the coats of the intestine were healthy. There was intussusceptio in two places of the small intestine; and the lower part of the ileum was inflamed. The colon was collapsed; the pylorus was hard, and a little thickened; and the inner surface of the stomach at the pyloric extremity was considerably eroded.

SECTION III.

ILEUS WITH MECHANICAL OBSTRUCTION, OR OTHER ORGANIC CHANGES IN THE STRUCTURE OF THE PARTS.

§ I.—Old disease of the intestine connected with hernia and artificial anus.

Case XXXV.—A lady, aged about 60, had twenty-seven years before her death suffered from strangulated hernia, which terminated in artificial anus in the right groin. This continued open for a very considerable time, and then gradually closed. Ten years after this, she had another attack, which was reduced without operation; but, from this time, she had been liable to attacks of pain in the abdomen, accompanied by obstruction of the bowels. It was in one of these attacks, more violent than usual, and which had not yielded to the usual remedies, that I saw her along with Mr. Young on the 12th March, 1827. There were then severe pain and tension of the abdomen, urgent vomiting and obstinate costiveness; the pulse little affected.

In the right groin the cicatrix left by the artificial anus was very obvious; a small puffy tumour protruded from beneath the crural arch, which could be reduced without any difficulty; and the aperture felt quite free.

This severe case having resisted every remedy for four days, and the patient's strength beginning to give way, it was determined, in consultation with Dr. Ballingall, to attempt her relief by an incision in the seat of the cicatrix. This was accordingly made by Dr. Ballingall in the evening of the 15th. The incision laid open an old hernial sac, which adhered intimately to the surrounding parts, and a small quantity of serous fluid was discharged from it. Towards the outer side of the sac, there lay a substance scarcely exceeding a third of an inch in diameter, descending from beneath the crural arch, and attached closely by its extremity to the bottom of the sac. It was entirely without strangulation—the passage around it beneath the arch being entirely free on all sides. This body, on farther examination, was found to be a small finger-like process of the intestine, and had evidently formed the communication betwixt the intestine and the artificial anus,—the extremity of it being closely attached to the cicatrix. It had been accidentally opened in making the first incision, and was afterwards more freely laid open; and the finger introduced by it, could be freely carried into the intestine, in every direction, without any feeling of obstruction. No relief followed the operation; the symptoms continued unabated, with stercoraceous vomiting; and the patient died on the 16th —eighteen hours after the incision. No discharge had taken place from the opening during all this period.

Inspection.—The portion of intestine laid open in the operation was found to be in the lower part of the ileum; and a small process, or appendix, went off from one side of the intestine at the part, and descended into the hernial sac. The coats of the intestine were

somewhat thickened, both above and below this spot, but there was very little sensible diminution of its area. Above the diseased portion, the intestine was greatly distended, without any remarkable change of colour or structure. It contained only air and liquid feces; and no obstacle appeared to the free discharge of these by the orifice in the groin, for the feculent matter began to flow freely during the dissection.

§ II.—Internal hernia.

Case XXXVI.—A gentleman, aged 25, on 8th August, 1821, was seized with pain in the abdomen, and other symptoms of ileus, for which he was treated by Dr. Macauly in the most judicious and active manner, but without relief. I saw him on the 10th; his pulse was then 96 and weak, and his countenance exhausted. The pain had subsided; there was no tumefaction of the abdomen, and he bore pressure over every part of it; but there had been no stool. On the 11th and 12th there was no change, except some very slight evacuations by injections. On the 13th, the pain returned with great violence in the abdomen, with vomiting and rapid failure of strength, and he died in the night.

Inspection.—The whole tract of the small intestine was greatly distended, and there was superficial inflammation in many places. About three inches from the caput coli, a turn of the ileum about three inches in extent was strangulated and gangrenous; and the strangulation was produced by a firm ligamentous band, which came down from the omentum, and was firmly attached to the parts about the brim of the pelvis.

Case XXXVII.—A girl, aged 17, was seized, on the 5th of July 1818, with violent pain and tenderness of the abdomen, vomiting and obstinate costiveness. Various remedies were employed for four days without relief. I saw her on the 9th; the abdomen was then enormously enlarged, tense and tender; there had been no evacuation of the bowels; the pulse was feeble and rapid; and she died at night.

Inspection.—The small intestine was much distended and inflamed; and in several places it had burst, and discharged thin feculent matter into the cavity of the peritoneum. At the root of the mesentery, on the right side, and on a line with the head of the colon, there was a mass of diseased glands the size of a large egg. To this mass the appendix vermiformis adhered very firmly by its apex, and, as it stretched across betwixt this tumour and the caput coli, it left beneath it a space which admitted three fingers. In this space, a turn of intestine, six inches in length, was strangulated and gangrenous.

Case XXXVIII.—A man, aged 28, was seized with the symptoms of ileus in the usual form, on the 15th of August 1815, and died on the 18th.

Inspection.—There was a hard glandular mass of considerable size formed in the mesentery. To this mass, several turns of intestine had contracted adhesions of long standing, and the calibre of the intestine, at several of these points, was very much contracted. At one place, a portion of intestine adhered to the mass by two contiguous points, leaving betwixt them a space which admitted a finger; and, in this space, a small portion of a contiguous turn of intestine was strangulated. The parts above were distended and gangrenous.

About two years before his death, this man had suffered much, for some months, from deep-seated pain in the abdomen; but he had got well, and from that time had enjoyed tolerable health, except two attacks of

pain in the abdomen and vomiting, which were of short duration; the second was about a fortnight before his death, and was relieved by a dose of castor oil.

§ III.—Intus-susceptio.

Case XXXIX.—A woman, aged 32, (9th November 1818) while sitting dressing her child, was suddenly seized with vomiting, and pain at the stomach, which soon after moved downwards, and fixed with intense severity in the region of the head of the colon; the whole abdomen then became painful and tender. (10th.) Urgent vomiting, violent pain over the whole abdomen, with frequent paroxysms of aggravation, which produced screaming;—abdomen tender; pulse 120, small and feeble; countenance exhausted. She lived in extreme distress, without any particular change in the symptoms, for three days more, and died on the 13th.

Inspection.—The small intestine was greatly distended. About three inches from the lower extremity of the ileum, there began an inversion of the intestine to such an extent, that more than eighteen inches of the ileum had passed into the cavity of the caput coli. The inverted parts were inflamed, and extensively gangrenous,—some portions being reduced to the state of a soft pulp. The colon was healthy.

Case XL.—A young man, aged 19, awoke in the night of 23d October, 1819, complaining of violent pain in the abdomen, with urgent vomiting. Pulse at first natural, but in the course of the day became frequent—pain little increased by pressure. All the usual remedies were employed without relief. I saw him

on the 25th; pulse then 120, and feeble; urgent vomiting; belly not tumid, and little or no pain on pressure; no stool; features collapsed. He died in the night.

Inspection.—The small intestine was considerably distended, with inflamed portions and spots of gangrene. Near the lower end of the ileum, there was an intus-susceptio, in which the included portion, about eight inches in extent, was very soft and gangrenous. Below this, there was in the cavity of the ileum, a considerable quantity of coagulated blood.

Case XLI.—A boy, aged 2 years and 5 months, 7th May, 1812, had vomiting, pain in the lower part of the belly, and tenesmus, by which he passed small quantities of bloody mucous, and some pure blood. Pulse very frequent; abdomen to the touch, natural; much restlessness; countenance depressed and anxious. On the 8th, while he was straining at stool, a tumour of a dark bloody colour protruded from the anus, to the bulk of an egg. It was easily reduced, but, on examination, was distinctly ascertained to be inverted intestine; and a probang, being introduced, passed to a great depth by its side, without reaching the commencement of the inversion. The child died on the following morning.

Inspection.—A most remarkable inversion of the intestine was discovered, which began at the middle of the arch of the colon; and the parts concerned in it, including the remainder of the colon and a corresponding portion of the ileum, measured thirty-eight inches. The part that had protruded at the anus was the inverted caput coli. The inverted portion of the colon was of a dark livid colour, very soft, and, at some places, thickened. The portion of the ileum included within this was tolerably healthy. Besides the mesentery con-

nected with the inverted intestine, a portion of omentum was included.

I have seen another case exactly resembling this, except in the extent of the inversion, which began at the lower part of the colon. The patient was a boy of about 4 years of age, and he survived five or six days.

Case XLII.—A child, aged 8 months, (12th June, 1826) lay with an expression of much exhaustion, and occasionally seemed in a state of syncope; frequent vomiting; abdomen soft, free from tension, and without any appearance of tenderness; but no stool except small quantities of bloody mucus. Ill three days; continued through the day without any change in the symptoms, and died in the night.

Inspection.—A portion of the ileum, more than twelve inches in extent, was inverted, and firmly impacted with the caput coli; some inflammation had commenced in the parts above.

Case XLIII.—A child, aged 6 months, had been ill for some days with diarrhœa, with frequent green stools. 28th July, 1826, was seized with screaming, and screamed violently for several hours; had also frequent vomiting. (29th.) Some vomiting, but not urgent; febrile oppression and scanty discharges of bloody mucus from the bowels. (30th.) Much oppression; abdomen soft, but a deep-seated defined fulness was felt in the left side; no vomiting; a few scanty stools of reddish mucus, without feces. Various purgatives had been given without effect, and injections could not be made to pass up. (31st.) No vomiting; no distention of the abdomen; increasing exhaustion; evacuations from the bowels the same as yesterday; died at night.

Inspection.—Extensive intus-susceptio; the inversion began at the middle of the arch of the colon; and

the remainder of the colon and the corresponding extent of the ileum, were included in the inversion, and extended as low as the sigmoid flexure of the colon. The included parts were very dark coloured, turgid, and in some places ulcerated.

§ IV.—Ileus from a gall stone.

Case XLIV.—A man, aged 45, had been repeatedly affected with violent paroxysms of pain, followed by jaundice, which had been supposed to indicate the passage of gall stones. On 3d June, 1822, he was seized with one of those paroxysms in the usual manner, and the pain continued in great violence through the whole day, accompanied by vomiting. On the fourth, the violent pain in the region of the gall ducts had subsided; but he now complained of more general pain over the abdomen; his pulse was becoming frequent, and his bowels had not been moved. On the fifth, the symptoms were those of complete ileus, and he died in the night. I had seen him only late in the evening.

Inspection.—The upper half of the small intestine was distended and inflamed, with considerable exudation. The lower half was collapsed, empty, and of a healthy appearance. At the place where the distention ceased, there was found a large biliary calculus, four inches in its larger circumference, and three and a half in its smaller. The common duct was enlarged, so as easily to admit a finger. The gall bladder was in a state of inflammation, and was softened and partially disorganized.

§ V.—Contraction of the calibre of the intestine.

Case XLV. A man, aged 70, had complained for several weeks of a deep seated pain referable to a defined spot at the lower part of the abdomen; but it was not so severe as to prevent him from following his usual employments. On the 27th of July, 1815, he was seized with symptoms of ileus, and died on the 31st.

Inspection.—The whole of the small intestine and the colon were in a state of great and uniform distention, and of a dark colour. The distention stopped at the second turn of the sigmoid flexure, before it turns down to terminate in the rectum. Here the intestine was, for about an inch and a half, very much thickened in its coats, and its calibre was so diminished as scarcely to admit the point of the little finger. The inner surface of this portion was covered with red fungous excrescences, like granulations. Much feculent matter was accumulated in the parts above.

Case XLVI. A woman, aged 60, had complained for some time of frequent uneasiness in her bowels, with much flatulent distention. (27th August, 1817.) Uneasiness in the bowels was increased; no stool for four days. From this time she resisted every remedy, but the symptoms were not violent; there was occasional griping, but no fixed pain; no fever; no tenderness; and little vomiting; but the bowels did not yield, and the belly became gradually more and more distended. She died exhausted on the 4th September.

Inspection.—The whole tract of the intestinal canal was prodigiously distended, and there was in several

places recent inflammation, with exudation of false membrane. The disease extended to the rectum, about four inches from the anus, where the canal was so contracted as scarcely to admit the point of a very small finger. Behind this spot, there was a large mass of diseased glands, and the contraction was occasioned by a firm flat substance, which crossed the intestine in front, and was connected on both sides with this mass. When this substance was cut through, the intestine was set at liberty, and its coats were healthy.

Case XLVII.—A woman, aged 63, had enjoyed tolerable health till within three months of her death. She then had vomiting and costiveness for a week, and was relieved by purgatives. After this, she complained of nausea, without vomiting, and without pain; the abdomen was at first tumid, but afterwards subsided. After a month, she was confined to bed with constant nausea and an obstinate state of the bowels, and she had frequent attacks of vomiting, which sometimes continued for several days; in the intervals, she complained only of nausea and want of appetite; purgatives were vomited, but the bowels were kept open by injections. She died, gradually exhausted, about three months from the commencement of the disease.

Inspection.—There was great thickening and induration of the coats of the ileum at its termination in the colon, and the opening was so narrowed that it only admitted the point of the little finger. The ileum was distended and dark coloured.

Case XLVIII.—A girl, aged 14, previously enjoying excellent health, was seized with symptoms of ileus on the 2d April, 1828. She was treated in the most judicious manner by Dr. Ross, but without relief, and I saw her along with him on the 3d. The pulse was then rapid and feeble; countenance anxious and ex-

hausted; abdomen distended, tympanitic, and tender; no stool except small discharges of white mucus; frequent vomiting. She died on the 5th.

Inspection.—The whole tract of the small intestine was in the highest state of distention, and of a livid colour, with some exudation of false membrane. This state terminated abruptly at about ten inches from the lower extremity of the ileum, and the remainder of the ileum was of a healthy colour, but appeared unusually thick, firm, fleshy, and of a tortuous figure. The canal of the intestine, through this portion, was found to be narrow, tortuous, or folded, so as to be traced with difficulty. On farther examination it was discovered, that this singular mass was formed by numerous small turns of the intestine adhering to each other in a very firm manner; and the outer surface of the mass was so covered over by a new membrane, as to make its external appearance smooth and uniform. When this membrane was removed, and the adhesions were separated, which was done with difficulty, the coats of the intestine appeared to be quite healthy. The disease was evidently of very old standing, but the patient had never been known to complain of any uneasiness in the bowels till the fatal attack.

§ VI.—Remarkable stricture of the arch of the colon.

Case XLIX.—A man, aged 24, had an attack of cholera about a year before his death, and from that time was liable to uneasiness in his bowels, with costiveness. After some time, he had great enlargement of the abdomen, which however subsided after some weeks; and the only symptoms then were, progressive loss of

strength and most obstinate costiveness. When I saw him, a few weeks before his death, he was much wasted, had a very small pulse, his belly was tense and a little tender, his bowels were obstinately costive, and the strongest medicines and injections often failed in producing the smallest evacuation. He had occasional vomiting, but it was not urgent; he died, gradually exhausted, without much suffering; his abdomen had been tense, but not remarkably distended.

Inspection.—In the centre of the arch of the colon there was a remarkable stricture, which only admitted the point of a very small finger from the left side. On the right side, the opening was covered across its centre by a flap apparently composed of fibres from the mucous membrane, which were attached at the upper and lower parts of the opening, and left only a lateral passage on each side of it. The left side of the colon, from the stricture downwards, was completely collapsed into a cord not larger than a finger. From the stricture, the right side became immediately distended to upwards of twelve inches in circumference; it continued of this size to the caput cœcum, and the whole was completely impacted with firm consistent feces. A great part of the small intestine was also distended with consistent feces.

APPENDIX

TO THE

PATHOLOGY OF ILEUS.

The two following cases, though not immediately connected with the subject of the preceding section, are given in the form of appendix, as they seem to illustrate points in the pathology of ileus.

§ I.—General tympanites.

Case L.—A man, aged 40, had undergone an operation for fistula of small extent, which healed favourably; and he was preparing to return to the country, when in the night preceding 1st September 1825, he was seized with vomiting. He vomited repeatedly through the night, and his bowels were moved moderately. In the morning he was somewhat feverish; he had pain in his bowels, the abdomen was tense, and there was occasional vomiting, but not urgent. He took laxative medicine, which produced several dark watery evacuations, without relief; and in the evening he was becoming exhausted, with a rapid pulse. I saw him on the morning of the 2d. He was then extremely exhausted; perspiration standing in drops on his forehead; extrem-

ities cold; pulse 160, and feeble; abdomen much distended and tympanitic; it was somewhat pained when pressed, but not acutely tender; some vomiting continued; bowels moved several times; stools dark, watery, and scanty; every attempt was made to rally him without effect; he died early in the afternoon.

Inspection.—The whole tract of the bowels, to the very extremity of the rectum, presented one continued state of great tympanitic distention; in some places they were tinged of a deep red colour; in others, of a livid or leaden colour, but without any change in their structure. There was a slight appearance of inflammation on the omentum at the lower part, and in the cavity of the pelvis there were a few ounces of a yellowish sanious fluid, slightly puriform.

§ II.—Effects of galvanism on distended intestine.

Case LI.—A gentleman, aged 50, for whose case I am indebted to Mr. Clarkson of Selkirk, was affected with vomiting and pain in the right side of the abdomen, which was hard, distended, and acutely tender to the touch. His bowels were obstinately costive, and resisted the action of the strongest purgatives, except when assisted by repeated and strong injections. Treatment upon this plan had been continued for a fortnight, with very slight effect, when Mr. Clarkson determined upon trying the application of galvanism to the part of the abdomen which was hard and tense. The application was almost immediately followed by copious evacuation from his bowels, and it was continued daily for about ten days with the same uniform result. After the application had been made for a few minutes, there usually commenced a commotion of the bowels, with a

rumbling noise ; and this was soon followed by a copious evacuation. The evacuation sometimes did not take place till after the galvanism had been continued for the usual time, which was about twenty minutes ; but, at other times, the call became so urgent during the application, as to oblige him to suspend it, and allow the patient to retire. The tension and tenderness of the right side of the abdomen rapidly subsided, and in a few days every feeling of uneasiness was gone. At first he discharged much black hardened feces, but they became gradually more natural, and at the end of ten days the galvanism was discontinued.

SECTION IV.

PATHOLOGICAL AND PRACTICAL INDUCTIONS FROM THE PRECEDING FACTS.

From the cases now detailed, illustrative of the various modifications of ileus, some principles appear to be deducible, of much pathological interest and practical importance.

At the earliest period at which we have an opportunity of seeing the condition of the parts in a fatal case of ileus, it seems to consist in a state of simple distention without any visible change in the structure of the part.—(Case XXIV.) At a period a little more advanced, we find on the distended part a tinge of vivid redness.—(Case XXV.) In another state of the disease, the distended part presents a leaden or livid colour, without any sensible change of texture,—(Case XXVI ;) and, at a period still more advanced, this seems to pass in-

to gangrene, (Case XXVII.) It is probable that these appearances are chiefly seated in the muscular coat, for we see them, in the cases referred to, pass through all these stages without any appearance indicating peritonitis. But it also appears that the affection, in its more advanced stage, may be combined with peritonitis, as in Case XXVIII, in which we find the gangrene combined with exudation of false membrane.

The next interesting point in this investigation is to mark the condition of the muscular action of the bowels, during the progress of these morbid changes. At the more advanced period of them, it is evident that the muscular action is entirely destroyed ; for we find the part which has been distended fallen flat when it is emptied, and presenting a broad surface like an empty bag, without any tendency to contraction, (Case XXVII.) This case, indeed, presents the disease in a state of perfect gangrene ; but it appears that the same loss of muscular power may take place at a much earlier period, and in connection with a much lower state of disease. This appears from the very remarkable case, (Case XXXV.) in which the patient lived for eighteen hours, with a free external opening directly communicating with the distended intestine, but without any discharge taking place, though the part contained only air and fluid feces. In this case the intestine, for a considerable space above the opening, must have been entirely deprived of its muscular action, and yet, upon examination after death, the part presented only a uniform distention, without any remarkable change either in colour or texture. A similar condition of the parts must have existed in Case XXXIII, in which the obstruction was within reach by the rectum, and was repeatedly dilated by various mechanical means, without any discharge following. A remarkable illustration of these principles is derived from Case LI, in which an obstruction, which had resisted the most

active purgatives, and was accompanied by an evident and painful distention of a part of the bowels, was removed by the repeated application of galvanism to the part; each application being immediately followed by a copious evacuation. It is probable, therefore, that there occurs in the state of ileus a certain loss of the muscular power in a portion of the canal, in consequence of which it does not act in concert with the other parts, but becomes distended by the impulse from the parts above, which in the healthy state would have excited it to contraction.

In a fatal case of ileus, however, we generally find one part of the intestine in the state of distention here referred to, and another part empty and collapsed, presenting nearly the form of a cord; and there has been supposed to be a difficulty in determining which of these is the primary seat of disease,—some having contended that the collapsed part is contracted by spasm, and thus proves a source of obstruction, which leads to the distention of the parts above. The doctrine of spasm, as applied to this subject, must be admitted to be entirely gratuitous; and we must proceed upon facts, not upon hypothesis, if we would endeavour to throw any light upon this important pathological question. The following considerations seem to bear upon the inquiry:—

1. The collapsed state of intestine, in which it assumes the form of a cord, appears to be the natural state of healthy intestine when it is empty. We often see nearly the whole tract of the canal in this state in the bodies of infants, who have died of diseases not connected with the abdomen, but in whom the bowels have been kept in a very open state up to the period of death. We cannot doubt that a similar state of uniform contraction is the healthy condition of other muscular organs when they are empty, such as the bladder. We have then no sufficient ground for assuming that

the state of uniform contraction of intestine is a state of disease; on the contrary, the facts favour the supposition of this being its healthy condition when it is entirely empty.

2. On the other hand, we learn from various cases, particularly from the remarkable case, (Case L.) that a state of uniform distention, with lividity, may occur as a primary disease of the intestinal canal, without any appearance of obstruction, and without any part of it being in a contracted state.

3. In a case of ileus, the collapsed parts are almost invariably found in a healthy condition at all periods of the disease; the morbid appearances, whether inflammation, lividity, exudation, or gangrene, being almost entirely confined to the distended parts.

4. In Case XXXV, every obstruction below was entirely removed, while the parts above were, to external appearance, in a healthy state,—and yet the action was entirely suspended.

5. In Case LI, the cause, which uniformly acted in so singular a manner, must be supposed to have acted upon a part only whose action was impaired, not upon one which was spasmodically contracted.

6. In Cases XXIX, XXX, and XXXI, we see the state of distention arising from causes entirely of a different nature, without the peculiar contraction here referred to; and on the other hand, in Cases XXXII, XXXIII, and XLIV, in which the disease was distinctly traced to a mechanical cause, this peculiar contraction existed below the seat of the obstruction, but could not be considered as having had any influence in producing the disease. In Case XXXIII also it is to be remarked, that the contracted part was repeatedly and freely dilated during the course of the disease, without any effect in relieving the parts above.

On these grounds, I submit the probability of the opinion, that, in a case of ileus, the distended part is

the real seat of the disease; and that the contracted part is not contracted by spasm, but is merely collapsed, because it is empty, its muscular action being unimpaired.

On a subject of this nature, it is dangerous to speculate beyond simple induction from the facts which are before us; but there appear to be certain points connected with the action of the intestinal canal, which may be ventured upon in connection with this inquiry. If we suppose then that a considerable tract of the canal is in a collapsed state, and that a mass of alimentary matter is propelled into it by the contraction of the parts above, the series of actions which will take place, will probably be the following: When a portion which we shall call No. 1. is propelling its contents into a portion No. 2, the force exerted must be such, as both to propel these contents, and also to overcome the tonic contraction of No. 2. The portion No. 2. then contracts in its turn, and propells the matter into No. 3; this into No. 4, and so on. Now, for this process going on in a healthy manner, it is necessary, that each portion shall act in consecutive harmony with the other portions; but there appear to be several ways in which we may suppose this harmony to be interrupted; (1st.) If the portion No. 1. has contracted and propelled its contents into No. 2, and No. 2. does not contract in its turn, the function of the whole will be to a certain extent interrupted, and the contents will lodge in No. 2, as in an inanimate sac. The parts above continuing to act downwards, one of two results will now take place; either the parts above will be excited to increased contraction, and the matters will be forced through into No. 3, independently of the action of No. 2, and so the action be continued; or, new matter being propelled into No. 2, this will be more and more distended, until an interruption of a very

formidable nature takes place in the function of the canal. (2d.) If, in the series of actions now referred to, No. 4. contracts in its turn, while some obstacle exists to the free dilatation of No. 5. it is probable the motion may be so inverted, that the contraction of No. 4. may dilate No. 3. and that this inverted action may be communicated backwards to the other portions. Something of this kind seems to have occurred in a striking manner in Case XXXIV. In the state of parts here referred to, varieties may occur, which appear to give rise to important differences in the phenomena. The obstruction to the dilatation of No. 5. may exist in various degrees; in a smaller degree, it may not prevent it from acting in harmony with the other parts, when the quantity of contents is small, and only a small degree of dilatation is required; but, when there is an increased distention of the parts above, either from increase of solid contents, or from some accidental accumulation of flatus, then a greater degree of expansion may be required than No. 5. is capable of, and, in this manner, interruption may take place to the harmonious action of the canal. It is probably, in this manner, that, in connection with slight organic affections of the canal, we find the patient liable to attacks of pain and other concomitant symptoms, which at first occur only at long and uncertain intervals, but at length terminate in fatal ileus. This important modification of the disease is strikingly illustrated by Cases XXIX, XXX, and XXXV; in the two former of which, it is particularly to be remarked, that there was no mechanical obstruction. In such cases, it is also to be observed, that, though the healthy action is interrupted, a portion of the contents may pass through. This evidently occurred in the very interesting case, (Case XXXIV.) in which evacuation from the bowels was regularly procured, though the action of the canal was

uniformly inverted, whenever it reached the seat of the disease.

The principles now slightly referred to, seem to bear upon many affections of the intestinal canal, which we in vain endeavour to reconcile with the vague and indefinite doctrine of spasm. But I forbear from speculating upon them farther at present, and shall conclude this part of the subject by certain inductions of a practical nature, which appear to arise out of the cases which have been described.

1. The most uniform morbid appearance, in fatal cases of ileus, is a greater or less extent of the intestinal canal in a state of great and uniform distention.

2. This distention appears to constitute a morbid condition, which may be fatal without passing into any farther state of disease.

3. The usual progress of the disease, in the fatal cases, is into inflammation and its consequences; and we have seen it fatal, while the inflammation was in various stages of its progress, from a recent tinge of redness to extensive gangrene.

4. There seems to be great variety in the period at which the inflammation takes place. It appeared to be quite recent in Case XXV. which was fatal on the 9th day, and in Case XXXIII. which was fatal about the 13th, while in Case XXVII. it had passed into extensive gangrene as early as the 3d day.

5. Pain increased upon pressure does not appear to be a certain mark of inflammation in the bowels; for it occurred in Case XXIV. in which there was no inflammation; and, in several of the other cases, it was met with before probably inflammation had commenced. From various observations I am satisfied, that intestine, which has become rapidly distended, is painful upon pressure; it is, however, a kind of pain, which, by at-

tention, can generally be distinguished from the acute tenderness of peritonitis.

6. Sudden cessation of the pain, and sinking of the vital powers, are not necessarily indications of internal gangrene; for we have seen these symptoms existing with recent inflammation; and, in a subsequent part of this inquiry, I shall have occasion to refer to several cases in which they were recovered from.

7. On the other hand, we have seen cases of extensive gangrene, in which the pain continued violent to the last.

8. The pulse appears to be a very uncertain index of the condition of the parts in ileus. In Case XXV. in which there was considerable inflammation, it was less affected than Case XXIV. in which there was none. In Case XLVI. again, there was neither frequency of pulse, nor tenderness of the abdomen, though there was inflammation with exudation to a very considerable extent. Many other important circumstances, with regard to the state of the pulse, may be remarked in the cases; one of the most important is in Cases XXVII. and XXX. which were fatal, with extensive inflammation and gangrene, within eight or ten hours from the time when the pulse was first observed above the natural standard. In others, in which the disease was equally extensive, we find the pulse but slightly affected through the whole course of the disease.

9. Ileus does not appear to be necessarily connected with feculent accumulation, or with any condition of the contents of the canal; for we have seen it fatal while these contents were of a natural appearance, almost entirely fluid, and in very small quantity.

10. Ileus does not appear to be necessarily connected with obstruction in any part of the canal; for we

have seen it fatal without obstruction, and we have seen every thing like obstruction entirely removed without relieving the symptoms.

11. We must be cautious in forming a favourable prognosis in ileus, from the appearance of feculent evacuations. For these, we have reason to believe, may occur while the disease is nevertheless going on to a fatal termination; and much feculent matter may lodge in the lower part of the intestine, which is healthy, and may be brought off by injections, while the disease above remains unchanged.

12. Organic disease of great extent may exist in the intestinal canal, without sensibly interrupting its functions, until at length, from some cause which eludes our observation, it suddenly produces fatal ileus. (Cases XXXVIII. XLV. and XLVI.)

13. On the other hand, such organic disease may be fatal by gradual exhaustion, without ileus. (Cases XXXIV. XLVII. and XLIX.)

From a review of the whole subject, it appears, that there is a remarkable variety in the morbid appearances in those cases which are usually included under the term ileus. We have seen simple distention without any change of structure, and we have seen extensive inflammation and gangrene. We have seen, in several instances, the distention apparently taking place at an early period, and gradually increasing through a protracted case, and then fatal with little or no change in the texture of the part; and in others, we have seen at a very early period, and with much less distention, extensive inflammation and gangrene. It would, therefore, appear probable, that, in the cases which assume the characters of ileus, there is great diversity in the primary state of the affected parts; that, in some, it consists of simple loss of muscular power, though it may pass into inflammation at an advanced

period; while in others, it is at an early period connected with inflammation as a part of the primary disease. These cases seem to differ from enteritis in their symptoms, chiefly by the absence of fever; and, in the morbid appearances, by being fatal with simple gangrene, uncombined with the flocculent or pseudo-membranous deposition, which is so prominent a character of enteritis. Now, gangrene in the intestinal canal appears to be chiefly a disease of the muscular coat. A state resembling it is indeed observed occasionally in the mucous membrane; but the cases in which this occurs, are accurately distinguished by their own peculiar symptoms, and they do not affect this part of the inquiry. When, in the cases now under consideration, therefore, we find gangrene uncombined with any other morbid appearance, we are perhaps warranted to conjecture that the muscular coat has been the principal seat of the inflammation. It seems to constitute a modification of disease of much practical importance, quite distinct from enteritis, and assuming simply the characters of ileus; but a modification of ileus of the most formidable kind, and very rapidly fatal. We shall afterwards see reason to believe, that inflammation may be seated in the peritoneal coat alone, producing a disease which may be fatal without any interruption of the action of the canal; or that it may affect the peritoneal and muscular coats at once, giving rise to the disease which we commonly call enteritis.

SECTION V.

TREATMENT OF ILEUS.

In entering upon the treatment of a case of ileus, the first point to be kept in view, is to make an accurate examination in regard to the existence of hernia; and here two circumstances are to be kept in mind,—1st, that hernia may exist without the patient being aware of it, or making any complaint that would lead to the supposition of its existence,—2d, that the hernia may be so very small as to include only a minute portion from one side of the intestine, and yet be the cause of fatal ileus.

In the medical management of cases which are referable to the general head of ileus, there are important distinctions to be kept in mind as to the state of the symptoms, which seem to require important diversities in the treatment. It is impossible to delineate minutely all these distinctions, but there are certain leading varieties, which, in a practical point of view, may be briefly referred to. These are chiefly the following.

1. Obstinate costiveness with distention of the abdomen, and considerable general uneasiness, but without tenderness, and without much acute suffering.

2. The same symptoms, combined with fixed pain and tenderness, referred to a defined space on some part of the abdomen, frequently about the head of the colon.

3. Violent attacks of tormina, occurring in paroxysms, like the strong impulse downwards from the action of a drastic purgative,—the action proceeding to a

certain point,—there stopping and becoming inverted, —followed by vomiting,—the vomiting often feculent.

These forms of disease will be recognised by the practical physician, as constituting affections distinct from each other. In a practical view, the importance of the distinction consists in pointing at two modifications of the disease which seem to lead to differences in treatment ; namely, a state in which there is a deficient action of the canal,—and one in which there is a violent action limited to a certain part of it, though ineffectual for overcoming a derangement which exists below. The practical application of the distinction refers chiefly to the use of purgatives in ileus ; and to the question, whether, in every case of ileus, the action of the canal requires to be excited by purgatives,— or whether there are not modifications of the disease in which its action rather requires to be moderated. The adaptation of the remedies to the individual cases in fact demands the utmost discretion ; and it is impossible to lay down any general rules for it. There are some cases which yield at first to a powerful purgative, and there are others in which anything like an active purgative is highly and decidedly injurious. A large dose of calomel will frequently settle the stomach, and move the bowels ; but, upon the whole, I think the best practice in general is the repetition, at short intervals, of moderate doses of mild medicine, such as aloes combined with hyosciamus. The peculiar and intricate character of the disease appears very remarkably from the fact, familiar to every practical man, that there are cases which yield to a full dose of opium, after the most active purgatives have been tried in vain. In regard to the use of purgatives, indeed, it may perhaps be said, that they form but a part of the treatment of ileus, and a part, too, which, in some forms of the disease, requires to be used with the utmost discretion. The

other remedies on which reliance is to be placed, are chiefly the following.

(1.) Blood-letting. We have seen the tendency of ileus to terminate by inflammation; but, besides this obvious fact, I have given my reasons for believing, that there is a modification of the disease, depending upon inflammation limited to the muscular coat, and therefore not exhibiting the characters of enteritis, but simply of ileus, though in a very violent and rapidly fatal form. On both these views, therefore, blood-letting is a most important remedy in every case of ileus, except distinctly contra-indicated by the age or habit of the patient; and the fact is familiar to every practical man, that the relief is often so immediate, that there is no time to raise the patient out of bed, or scarcely to tie up the arm, before complete evacuation takes place.

(2.) The tobacco-injection, as far as my observation extends, is the remedy of most general utility in all forms and stages of ileus. It should be given first with much caution,—perhaps not more than fifteen grains infused for ten minutes in six ounces of boiling water; after the interval of an hour, if no effect has been produced, it may be repeated in the quantity of twenty grains, and so on, until such effects are produced, in slight giddiness and muscular relaxation, as show that its peculiar action is taking place upon the system. It may then be repeated at intervals of one or two hours, a great many times, if the case do not speedily yield; and, with the precautions now mentioned, I have never seen any unpleasant effect from a free use of this powerful remedy.

If, while the tobacco injection is used in this manner, mild purgatives, such as aloes and hyosciamus, are repeated in full doses, every hour or two, the treatment is perhaps that which is most generally adapted to the ordinary cases of ileus; with the assistance of one or two bleedings, especially if the patient should be of a

full habit, if the pulse should be rising, or if there should be fixed pain or tenderness on any part of the abdomen.

(3.) The application of cold;—I have repeatedly employed the method so often recommended, of raising the patient into a standing posture and dashing cold water about his legs, but I cannot say that I have seen benefit from it. The best effects, however, I think are often produced by the continued application of cold to the abdomen by cloths wet in vinegar and water. In tympanitic states of the abdomen, when not accompanied by coldness of the surface, and in cases attended with local circumscribed pain and tenderness, this remedy is often followed by the most beneficial results. Cold injections have also been recommended. Of these I have had less experience, but, for various interesting statements in regard to the effects of cold in this class of diseases, I refer to a paper by Dr. Smith in the 9th volume of the Edinburgh Medical Journal.

(4.) Opiates. I have already alluded to a modification of the disease which yields to a full opiate, more readily than to any other mode of treatment. The case to which this practice is particularly applicable, is perhaps chiefly characterized by the paroxysms of violent tormina. If these are accompanied by frequency of pulse, and fixed pain or tenderness, a full bleeding, followed by an opiate, seems in general to be the best mode of treatment; and, when the patient has been brought fully under the influence of these, the bowels will often be moved without any other remedy, or yield to the very mildest means.

(5.) In the advanced stages of the disease, when the system begins to become exhausted, stimulants must be given freely; and, under the use of these, a case will often give way which had previously resisted the most active treatment. The aloetic wine is a convenient re-

medy in this stage of the disease, combining the stimulating with the mild purgative quality; and it is often found of great efficacy when given in full doses, of one or two ounces, repeated at the intervals perhaps of an hour. Tincture of aloes may be given in the same manner; and it is a remarkable fact, that, in this state of the system, and even with a tympanitic state of the abdomen, the tobacco injection, if given with sufficient caution, may still be employed with much advantage, along with the use of stimulants. Of a recovery under these circumstances, I give the following example, which also tends to show the formidable characters which the disease may assume, without having gone on beyond the chance of recovery.

Case LII.—A woman, aged 20, was affected with the usual symptoms of ileus in a very violent form, which, up to the fifth day, resisted all the usual remedies, assisted by general blood-letting. On the sixth day, her pulse, which had been at first natural, had risen to 120; the pain continued very violent over the whole abdomen, with urgent vomiting, and there had been no evacuation from the bowels. Farther bleeding was now employed, and various other means, without relief. In the afternoon, the pain nearly ceased; there was collapse of the features, with coldness of the surface; the pulse 140 and very weak; the vomiting continued; and she appeared to be nearly moribund. Wine was now given in the quantity of a glass every hour; and, after a few hours, her appearance being rather improved, the tobacco injection was employed, at first in very small quantity, and was repeated several times. It did not increase the sinking, but seemed rather to abate both it and the vomiting. On the following day, there was a decided improvement, and some scanty evacuation had taken place from the bowels; wine was continued in smaller quantities, and the tobacco injection

was repeated several times with partial but good effect. The vomiting abated, and some Epsom salt was retained, and operated. In the evening she was free from pain, and the pulse 96 ; and from this time she continued convalescent.

The remedies which I have now mentioned are those of which I have most experience ; but various others are to be kept in mind, as being sometimes useful. The warm bath is often beneficial at an early period of the disease, before there are any inflammatory symptoms. Crude mercury, in doses of one or two pounds, I have tried repeatedly, and in some cases it certainly appeared to allay the vomiting ; I have not observed any other effect from it. The forcible injection of a large quantity of fluid, to the amount of six or eight pounds, is said to have been successful in some cases. In the memoirs of the Medical Society of London, vol. ii, some interesting cases are described in which it was used with advantage. Large blisters over the abdomen are likewise extremely beneficial ; also the oil of turpentine applied externally or by injection. When the vomiting is very urgent, so as to prevent medicines from remaining on the stomach, large doses of calomel, of from fifteen to twenty grains, often remain better than any other medicine, and even seem to allay the vomiting. In such cases, also, I have sometimes found benefit from giving powdered aloes, repeated at short intervals in combination with the oxide of bismuth. Whatever practice is employed ought to be zealously persevered in, notwithstanding the most unfavourable appearances ; for the disease has been known to resist the most active remedies, and yet terminate favourably, as late as the 17th day.

PART II.

INFLAMMATORY AFFECTIONS OF THE MORE EXTERNAL PARTS OF THE INTESTINAL CANAL, INCLUDING PERITONITIS AND ENTERITIS.

In tracing the phenomena connected with inflammation in the intestinal canal, we cannot fail to take notice of three remarkable varieties in the symptoms. We find inflammation existing in the canal, and going on to a fatal termination, with a natural or easily regulated state of the bowels,—with insuperable obstruction of the bowels,—and with severe and uncontrollable diarrhœa or dysentery. In the first of these forms of the disease, we find on dissection extensive adhesion of the parts from pseudo-membranous deposition, and frequently some puriform fluid; in the second, we generally observe this appearance combined with gangrene; in the third, we find ulceration, or some other result of inflammation, on the internal surface of the canal, often without any morbid appearance in the external coats. From what we observe of the results of inflammation in

the corresponding structures in other parts of the body, we have every reason to believe, that, in the first of these cases, the inflammation was seated in the peritoneal coat; that, in the second, the muscular coat was also involved in the disease; and that, in the third, it was seated in the mucous membrane. The grounds upon which these distinctions are made, will appear more particularly in the sequel; but it is necessary simply to state them here, with a view to an arrangement of the subject, in dividing the inflammatory affections of the intestinal canal into three classes, in reference to the three structures which enter into its formation. We shall then, I think, see reason to believe; (1.) that intestinal inflammation may be confined to the peritoneal coat, and that, in this case, it may run its course without interrupting the muscular action of the canal; (2.) that the inflammation may affect the peritoneal and muscular coats at once, in which case, we have the symptoms of peritonitis, combined with obstruction of the bowels, constituting the disease to which we give the name of enteritis; (3.) that the inflammation may be entirely confined to the mucous membrane, producing a train of symptoms altogether different from those which occur in the preceding cases, and often running its course to a fatal termination, without any affection of the other coats. We shall see reason farther to believe, that these forms of disease may pass into each other, by spreading of the inflammation from one structure to another; that a case, for example, may begin as simple peritonitis, and may afterwards pass into enteritis; and that another may begin with severe diarrhœa, or dysentery, and afterwards terminate by inflammation of the other coats.

In treating of ileus, I have alluded to the important fact, that cases of ileus which have not shown any inflammatory symptoms, or not till a very advanced peri-

od, are sometimes fatal by extensive gangrene, without any inflammatory exudation; and, as gangrene, in such cases, must probably be considered as an affection of the muscular coat, I have proposed a conjecture, that the worst forms of ileus may sometimes depend upon inflammation confined to that coat. On the other hand, it will be found, that the cases which exhibit the characters commonly assigned to enteritis, are fatal either by extensive inflammatory exudation and adhesion, or by these combined with gangrene, never by gangrene alone. This is the result of my observation, as it stands at present; if it shall be verified by farther observation, it will give probability to the following conjectures: 1. That inflammation may exist in the intestinal canal, confined to the muscular coat, and marked by symptoms of ileus, without exhibiting the symptoms usually considered as characteristic of inflammation. It is unnecessary to add, that this is not meant to imply, that such inflammation occurs in all cases of ileus, but only in one modification of the disease, which is characterized by symptoms of ileus, without exhibiting those of enteritis. 2. That in the more acute affections of the bowels, assuming those characters which are usually considered as indicating inflammation, the disease is primarily seated either in the peritoneal coat alone, or in both the peritoneal and muscular coats at once.

In the practical consideration of this important class of diseases, I shall consider peritonitis and enteritis in connection, because they are very generally combined, or pass into each other; and I shall then treat separately of the inflammation of the mucous membrane.

SECTION I.

SYMPTOMS OF INTESTINAL INFLAMMATION UNDER THE FORMS OF PERITONITIS AND ENTERITIS.

I. Simple Peritonitis is distinguished by pain in some part of the abdomen, varying very much in its seat, its degree, and its general characters. It in some cases extends nearly over the whole abdomen, and in others, is confined to a particular space, as one side, or frequently, the lower part, immediately above the pubis. It is increased by pressure, and frequently is little complained of except when pressure is applied; being an acute tenderness of the parts, rather than actual pain. In other cases, there is acute pain, frequently coming on in paroxysms, which continue for a short time, and then pass off, leaving in the intervals only the acute tenderness; but this is sometimes in such a degree, that even the weight of the bed clothes is complained of. This form of the disease is very apt to be mistaken for a spasmodic or flatulent affection, from the remarkable remissions of the more violent pain. The paroxysms appear to be excited chiefly by flatus moving through the bowels, and distending the inflamed part; and the action of a purgative is often followed by a violent aggravation of all the syptoms. The pain is also aggravated by various exertions, such as coughing, sneezing,—often by a deep inspiration; and sometimes by any kind of muscular exertion, so that the patient lies extended upon his back, being afraid of the least motion out of that position, or even of the action of the abdominal muscles or of the diaphragm. In some cases

the pain is apt suddenly to shift its place from one part of the abdomen to another.

According to the seat of the inflammation, various neighbouring organs become affected. When it is in the lower part of the abdomen, there is often a frequent painful desire to pass urine, and an acute pain extending along the urethra; when it is in the neighbourhood of the kidneys, the secretion of urine is often greatly diminished, or nearly suspended; when it is in the upper part of the canal, there is frequently vomiting, and sometimes a particuliar spasmodic action like the belching of wind, which continues without intermission for a considerable time, and is accompanied by acute pain. In many cases, there is violent hiccup, with quick short breathing, probably connected with the disease extending to the diaphragm. The pulse is often little affected, especially in the early stages; it is perhaps from 80 to 90 or 96, but is often scarcely above the natural standard; as the disease advances, however, it is apt to rise, and often rises to great frequency. A leading peculiarity of the affection is, that the bowels are not obstructed, being either natural, or easily moved by mild medicines; but these evacuations produce no relief; on the contrary, they are generally attended by violent pain, and sometimes, after the disease appears to have been subdued, the operation of a purgative is immediately followed by a renewal of the symptoms in all their original violence.

This affection differs from enteritis in the bowels being natural or easily regulated,—in the pulse being often little affected,—in the pain frequently occurring in paroxysms,—and in the absence of vomiting, except in certain cases already referred to. These peculiarities are chiefly observed in the early stages; as the disease advances, the pain becomes more fixed and permanent, the pulse rises, the belly becomes tympanitic, and, at

a certain period, obstruction takes place, and the case assumes all the usual characters of enteritis. It may, however, be fatal without this change, the bowels continuing natural, and the pulse from 80 to 90, until a short time before death. At a certain period of the disease, there is a remarkable tendency to a tympanitic state of the abdomen. This is always a symptom to be watched with much anxiety, but is not necessarily a fatal one. It may either be connected with the progress of the inflammation, destroying the action of the parts ; or it may arise merely from the loss of tone, after the inflammation has been subdued. In the former case, it is generally a fatal symptom, but, in the latter, it may often be recovered from.

Simple peritonitis may be fatal in three days, but frequently it is more protracted, and in some cases, after the first activity of the symptoms has been subdued, the disease passes into a chronic form, and is fatal after several weeks or months. On dissection, we generally find extensive deposition of flocculent matter and false membrane, producing extensive adhesions, and frequently copious effusion of a limpid or milky fluid, and sometimes of a fluid with all the characters of pus. Gangrene is rare, and, as far as my observation extends, does not occur as a prominent appearance ; but when it is met with, is slight and partial, and always accompanied with extensive deposition of false membrane. I have already stated my conjectures in regard to the nature of this disease. I conceive that the inflammation is confined to the peritoneal coat ; that in this state it may be fatal without interrupting the muscular action of the bowels ; or that the inflammation may extend to the muscular coat, and then assume the characters of enteritis.

Inflammation of the peritoneum may occur in a more limited form than that which I have now described, and,

according to the seat of it, may assume the characters of diseases of other organs, as the bladder, the kidney, or the liver; or, when seated in the membrane lining the diaphragm, may simulate disease of the lungs. I think I have seen it in one case seated in the ligaments of the liver, giving rise to very obscure and anomalous symptoms. When it occurs near the kidney, I think it may give rise to the true Ischuria Renalis, which is fatal by coma and effusion in the brain; it may likewise take place in the omentum, as will appear from some of the cases to be mentioned. I do not know whether it ever occurs in the peritoneum lining the parietes, without affecting the covering of the intestine. I have seen some obscure cases, which appeared to be of this nature, but have not ascertained it, the cases having terminated favourably.

Simple peritonitis may occur in a still more limited form, producing no urgent symptoms at the time, but giving rise to partial adhesions, which may afterwards prove the source of much derangement in the action of the canal. Several of the cases described under the head of ileus must have been originally of this nature; and this form of the affection will also be illustrated by Case LVII. in which it was ascertained at an early period in consequence of the patient dying of another disease.

A remarkable circumstance in the history of peritonitis is, that the activity of the disease may subside, leaving apparently the patient in a convalescent state, and with all the abdominal functions in a healthy condition, while most extensive disease remains, which may go on for some time without its presence being suspected, until it assumes a fatal character, either suddenly, or by gradually undermining the health of the patient. This remarkable point in the history of the disease will be strikingly illustrated by Case LVIII.

II. Enteritis differs from simple peritonitis chiefly in the presence of vomiting and obstinate obstruction of the bowels. The pulse also is in general more permanently frequent, and the pain more violent and constant, often resembling the tormina of ileus. This, however, is not invariably the case; enteritis, on the contrary, being sometimes characterized chiefly by fever, with urgent vomiting and obstruction of the bowels, with tenderness of the abdomen, but without much complaint of pain. This variety seems to occur chiefly in young persons, as is exemplified in Cases LXIII. and LXIV. The pulse in enteritis is generally small and rapid, but not uniformly so, for we may find the disease with a full pulse and little increased in frequency, as in Case LX.

Enteritis is generally fatal with a tympanitic state of the abdomen and rapid sinking, and we commonly find on dissection extensive deposition of false membrane, with adhesion, often combined with deposition of flocculent or puriform fluid, and generally lividity, or some degree of gangrene. The disease, we have reason to believe, consists in inflammation affecting both the peritoneal and muscular coats at once; and it is probable that it may supervene either upon ileus or peritonitis, or may take place at first in its complete form. We shall afterwards see cause to conclude that it may likewise supervene upon inflammation beginning in the mucous membrane.

SECTION II.

EXAMPLES OF PERITONITIS AND ENTERITIS.

§ I.—Simple peritonitis.

Case LIII.—A girl, aged 15, on Sunday, 2d March, 1817, was at church in her usual health; in the evening she complained of some pain of the abdomen; (3d.) had pain of the belly and some vomiting; took castor oil, which operated copiously; (4th.) pain continued with some vomiting, but not urgent, and the complaint excited no alarm; bowels quite open. Was seen by a surgeon, who found her pulse 116 and very small, and the belly painful on pressure. (5th.) Belly tense and tympanitic; other symptoms as before. Was bled without relief; sunk rapidly and died at night. I did not see this case during the life of the patient, but was present at the examination of the body.

Inspection.—The whole tract of the small intestines presented one smooth uniform surface, being firmly glued together, and the interstices filled up by an immense deposition of coagulable lymph, which was quite soft and recent; and the mass likewise adhered to the parietes of the abdomen. There was a similar deposition, though in smaller quantity, on the surface of the great intestine; and it was traced nearly to the extremity of the rectum; it also appeared on the surface of the liver. The omentum was inflamed and dark coloured; and there were considerable marks of inflam-

mation on the peritoneum lining the parietes of the abdomen.

Case LIV.—A girl, aged 15, (12th May, 1818) had fever, with pneumonic symptoms; was bled with relief; the fever subsided gradually, and on the 19th she was considered as well. On the 20th, at night, she complained of some pain of the belly, which soon went off, and through the night she felt no uneasiness. On the 21st, had violent pain and tenderness of the abdomen, with some vomiting; pulse frequent. Took an opiate and afterwards some purgative medicine; the vomiting subsided after the opiate; the pain also was much alleviated, and was only complained of upon pressure. The purgative did not operate during the day, but operated freely in the night four or five times. I saw her for the first time on the morning of the 22d, and found her moribund; the pulse not to be counted from its frequency; features collapsed; belly tympanitic. She died in less than an hour after the visit.

Inspection.—On the surface of the bowels on many places, especially on the ileum, there was peritonitis with deposition of false membrane. On the inner surface of the ileum, near the caput coli, there was an inflamed portion, in the centre of which, there was a white spot the size of a shilling; and, in the centre of this spot, a round perforating aperture, which transmitted a quill; the edges of it were rounded, and a little thickened. Much fluid feces and gas had escaped into the cavity of the peritoneum, and the bowels were not distended; there were in some places a few livid spots, but no gangrene.

This case illustrates a highly dangerous, or indeed hopeless form of the disease, in which it originates in an ulcer perforating the intestine, and allowing the escape of its contents into the peritoneal cavity; the same form of the disease has already been exemplified

in connection with perforating ulcer of the stomach; and we shall have occasion to refer to it again, when we come to the consideration of ulcers of the mucous membrane.

These cases may be sufficient to establish the existence of the disease alluded to under this section, namely, fatal abdominal inflammation, with an open state of the bowels; but, as the disease is not of very common occurrence, I shall introduce here the following case described by Dr. Marshall Hall, which illustrates in a very striking manner the peculiar characters of this interesting affection.*

A man, aged 50, had acute pain in the hypogastric region, with frequent desire and difficulty of voiding his urine. After some relief during the night, his complaint was renewed on the following day, and, after the operation of a dose of castor oil, it increased to such a degree as to produce writhing of the body, with urgent ineffectual attempts to void urine; the pulse natural. Relief was obtained from the warm bath, after which urine was voided. (3d day.) Pain and dysuria continued, and the pain extended more generally over the abdomen; the bladder was found empty by the catheter; pulse nearly natural. (4th day.) There had been copious evacuations by stool; some high coloured urine passed; pulse 90, and soft; tongue white. (5th day.) Pain returned after a saline purgative, which operated scantily; it was now chiefly referred to a spot on the left iliac region, increased by pressure, but also attended with a more general pain over the abdomen; great restlessness, and much flatus in the stomach; a little vomiting for the first time on taking any thing, but no continued nausea or retching; pulse 96; in the evening 84, soft, and regular. (6th day.) The chief pain had shifted to the right iliac region,—the former pain

* Edin. Med. Jour. Vol. XII.

in the left having now ceased; pulse 124, and small; features collapsed; body cold; died at 4 P. M.

Inspection.—Much exudation and adhesion over the surface of the bowels; the ileum, cœcum, and colon, were injected with numerous vessels in some places, so as to acquire a dark colour; but the texture was firm and entire. The appendiculæ pinguedinosæ were injected and covered with a viscid effusion, communicating the appearance of a mass of disease. The external and posterior portion of the bladder appeared also a little injected; the other viscera were natural.

The following case bears a remarkable similarity in its symptoms to the very important case of Dr. Hall.

Case LV.—A gentleman, aged 25, (18th Sept. 1816,) was affected with pain in the bowels, accompanied by considerable dysuria, and frequent desire to go to stool, with scanty slimy discharges; pulse natural; took castor oil, which produced several stools, thin, feculent, and copious; but the pain continued unabated, accompanied with tenderness of the abdomen, and aggravated by motion; the more violent pain was not constant, but occurred in paroxysms; pulse in the evening 80. He was bled to 16 ounces, and took a moderate opiate. (19th.) Easy in the night, but, in the morning, the pain returned with such violence as to occasion screaming, and extreme distress; it was chiefly about the umbilicus, but sometimes shifted to the stomach; and there was violent pain in the region of the bladder, extending along the urethra, with much dysuria; great tenderness of the abdomen; some vomiting; pulse from 90 to 100; several feculent consistent stools after a mild enema. Was bled to 16 ounces, and took a dose of aloes. After the bleeding, the violent pain subsided, but the tenderness continued, with occasional short paroxysms of pain, and repeated vomiting. The dysuria continued, and at one time amount-

ed to retention, which was relieved by a mild enema; bowels freely opened. At night took an opiate. (20th.) Much depression, sickness, and faintness; abdomen tender, and a little tympanitic; no constant pain, but occasional paroxysms of short duration; respiration short and quick; and, on taking a full inspiration, he felt severely pained, and cramped across the epigastrium. He lay on his back, but could not bear the pressure of the bed clothes; countenance anxious; voice feeble; pulse 100; dysuria abated; some vomiting; tongue foul. Was bled again from the arm, and took some aloes. Was much relieved after the bleeding, and bore pressure upon the abdomen; breathed more freely, and spoke vigorously; tympanitic feeling gone; discharged much flatus, and the bowels were moved once. At night took gr. vi. of calomel. (21st.) In the early part of the night was restless, with delirium and frequent vomiting. In the morning, his bowels were moved four or five times with much relief; pulse 80; all the symptoms abated. From this time he continued well, but discharged much hardened feces for several days.

In this very important case, I believe the bleeding ought to have been pushed more actively in the early stages; and particularly that it ought to have been repeated on the evening of the 19th.

§ II.—Peritonitis confined nearly to the descending colon and rectum.

Case LVI.—A gentleman, aged about 60, (17th May, 1817,) complained of pain about the umbilicus, without fever. Took castor oil, aided by injections, and discharged much scybalous matter with relief; but

the pain returned in the evening, and he continued in great pain through the night; was bled from the arm by Mr. White. (18th.) Much pain complained of in the very lowest part of the abdomen, about the region of the bladder; and there were considerable fulness, tension, and a tympanitic feeling from the umbilicus downwards, but little or no tenderness. Pulse about 90. He took pills of aloes and colocynth, assisted by injections; and towards the afternoon his bowels were freely moved; but the pulse continuing about 90, he was again freely bled from the arm at night. Through the night, his bowels were moved repeatedly and freely, and the motions were feculent and healthy. (19th) Seemed much relieved; pulse natural; but the same feeling of tympanitic distention continued in the lower part of the abdomen, though without tenderness; he took some small doses of laxatives, and had repeated feculent motions through the day. In the evening, he complained of more pain, and the tympanitic feeling was increased. Through the night he was restless. In the morning of the 20th, he began to sink, and died at three in the afternoon.

Inspection.—The bowels were generally distended, and in many places of a dull leaden colour, with very slight patches of false membrane on the small intestines, but they appeared to be quite recent. The chief seat of the disease was on the rectum, the sigmoid flexure of the colon, and the lower part of the descending colon. These parts were covered by a very copious deposition of false membrane, producing extensive adhesions; and the cavity of the pelvis was quite full of thick pus and flocculent matter. The bladder was healthy.

§ III.—Local peritonitis of very small extent.

Case LVII.—A young man, aged 20, was recovering from an attack of natural small pox, but, going out too soon in cold weather, he was attacked with a febrile affection, and complained of a circumscribed pain in the left side of the abdomen near the umbilicus. There was no vomiting, and the bowels were quite natural. General and topical blood-letting were employed, by which he seemed to be entirely relieved; but after two or three days he became delirious, and then comatose. In this state I saw him, and the usual treatment was employed without any relief. He died in two days more. By the medicines which were given him during this period, his bowels were moved readily and freely.

Inspection.—There was high vascularity of the membranes of the brain, and considerable effusion under the arachnoid. In the left side of the abdomen, there was adhesion of two contiguous turns of the small intestine, through a space about six inches in extent; and the inner surface of one of the portions was extensively ulcerated. The other parts were healthy.

§ IV.—Peritonitis terminating by extensive suppuration.

The following remarkable case shows, in a striking manner, what extensive disease may remain after an attack of peritonitis though every symptom has been removed.

Case LVIII.—A young lady, aged 20, (9th July, 1822,) was seized with symptoms of peritonitis, which were relieved by blood-letting, and the other usual means; and on the 12th, she appeared to be convalescent. At night she took some pills of aloes and colocynth, which operated frequently with much irritation. After this, the pain of the bowels returned, and continued through the 13th. (14th.) There was severe pain of the bowels, with tenderness, and the pulse was again becoming frequent. She was now bled from the arm, and a second time a few hours after; and, after the second bleeding, she became very faint and low. I now saw her for the first time, and found the pulse extremely frequent and small; she had a look of extreme exhaustion, but there was still much pain and tension of the belly, with great tenderness; there was no vomiting. She was now treated by weak tobacco injections, cold applications to the abdomen, followed by blistering and small doses of aloes, with extract of hyosciamus, repeated every two or three hours. Under this plan, she gradually improved; the pain and tenderness subsided; the pulse came down; the bowels were moved freely and without irritation and after three or four days, she appeared to be convalescent. About the 20th, she complained of some pain in the region of the liver, which was quite removed by topical bleeding; and from this time she appeared to be recovering perfect health; the pulse and functions of the stomach were natural; the bowels easy, or easily regulated by the mildest medicine; and her strength improved daily.

About the 25th, she began to be troubled with a parotid swelling, which gave her a good deal of uneasiness; but in other respects she was well; she was in the drawing-room the greater part of every day, and every function was natural. The swelling advanced slowly to suppuration, and was of very considerable size; it discharged a little matter by the ear, but she

would not submit to have it opened. On the night of the 2d of August, she went to bed in her usual health, having been in the drawing-room through the day, and without any complaint except the parotid swelling. Early in the morning of the 3d, she awoke in great distress, with cough and oppressed breathing. When I saw her about 11 o'clock, her face was cadaverous; her breathing frightfully oppressed with a rattling sound. The pulse was very frequent, and there was in the room an intolerable fœtor. My first impression was, that the parotid swelling had burst into the larynx; but upon opening it, healthy pus was discharged, while small quantities of frothy fluid, which she coughed up, were intolerably fetid. She died about twelve.

Inspection.—Betwixt the diaphragm and the upper surface of the liver, there was formed a distinctly defined cavity, lined by a cyst of coagulable lymph, and containing at least a pound of thin puriform matter of intolerable fœtor. The left lung adhered extensively to the diaphragm, and the diaphragm was perforated by a small opening, by which the matter from the abscess had passed freely into the bronchial canals, and was traced as far as the trunk of the trachea. The liver was sound in its internal structure, but on its peritoneal coat there were some marks of inflammation. The intestines adhered to each other, through almost their whole extent, to the omentum, and to the parietes of the abdomen; so that no portion of intestine could be traced without tearing these adhesions, which were soft. Throughout this mass of disease there were in several places cavities of various sizes, containing purulent matter; one of these on the right side seemed to communicate by a small canal with the great abscess above the liver. In the posterior part of the pelvis, behind the uterus, another great abscess was discovered, containing nearly a pound of thin fetid pus. It was formed by adhesions betwixt the intestine, the uterus, and

the ovaria, so that it was completely cut off from the other parts, and remained entire, after the examination of them had been concluded.

That in this case the bowels should have continued to discharge their functions in the most healthy manner for a fortnight, is perhaps one of the most striking facts that can be presented in regard to the pathology of the intestinal canal; and can only, I think be accounted for by the supposition, that this remarkable extent of disease was entirely confined to the peritoneal coat.

Case LIX.—A woman, aged 40, after exposure to cold in the beginning of November, 1813, was affected with pain in the left side of the abdomen, at first remitting, but afterwards more constant, though without confining her to bed. This had continued for nearly a month, when I saw her in the beginning of December, with symptoms of more active peritonitis, from which she was relieved by repeated blood-letting, and the other usual means. The bowels were at first obstinate, but soon yielded to the usual remedies, and the immediate urgency of the symptoms was thus soon removed; but from this time she continued liable to transient attacks of pain in the belly, which were usually relieved by purgatives and opiates.

After one of these attacks, more severe than usual, about the middle of January, 1814, a hard swelling began to be observed on the left side of the abdomen, which gradually increased, with much pain and constitutional irritation, until the second week of February, when it broke and discharged a large quantity of very fetid pus. During this time her bowels were quite easy and the motions were natural. The discharge of matter now continued from the side, and several new openings were formed; but it gradually diminished, and all the openings were healed in the beginning of April. During the discharge, she had been much ema-

ciated and hectic, but she now began to improve; she was able to be out of bed in the end of April, and to walk out about the beginning of May. The attacks of pain in the abdomen still returned occasionally, but at longer intervals; and they were relieved as formerly by purgatives and opiates. On the 5th of May, she was attacked by a violent paroxysm of pain, which did not yield to any of the remedies that were employed; and she died early in the morning of the 6th.

Inspection.—Almost universal adhesions of the intestines to each other, and to the parietes of the abdomen; some of these were recent and others of old date. At one place about the middle of the small intestine, its calibre was very much contracted, and at this spot the intestine was bound down by adhesions to the spine; above the contraction, the canal was dilated into a large sac. No trace remained of the abscess except the cicatrix in the integuments, which nearly corresponded in situation with the place where the intestine was so much contracted.

§ V.—Peritonitis passing into enteritis.

Case LX.—A gentleman, aged 20, (3d September, 1812,) had pain and tenderness in the lower part of the abdomen; pulse from 84 to 90, and full; bowels natural. Was bled and took laxative medicine which operated fully. The bleeding was repeated on the 4th, and on the 5th and 6th, he was much better, complaining only of occasional griping, and his pulse was quite natural. Took laxative medicines which operated fully; the motions copious but rather watery and of a greenish colour. (7th.) Free from complaint in the morning, and the bowels open. In the afternoon, he

complained that some laxative medicine had produced most unusual pain; and at night he had fixed pain in the upper part of the abdomen, with shivering followed by heat; pulse 84. Through the night had copious feculent evacuations, without relief of the pain, and repeated vomiting. (8th.) Pulse 96; fixed pain in the abdomen, which was hard, tender, and tympanitic; repeated vomiting; the bowels obstructed; repeated blood-letting and all the other usual remedies were employed without relief. (9th.) Pain unabated; belly tympanitic; but less tender; vomiting abated; no stool except some very scanty discharges of watery matter; pulse from 100 to 126; hiccup. At night the pain abated; the bowels were moved, but sinking took place; and he died at nine in the morning of the 10th.

Inspection.—All the intestines much distended and glued together by most extensive adhesions; omentum highly inflamed and adhering to the intestines. At the lower part of the small intestine, an extensive portion was gangrenous, and another at the lower part of the descending colon. The appendix vermiformis was gangrenous, and an opening had taken place in it through which liquid feces had escaped into the cavity of the abdomen.

Case LXI.—A gentleman, aged 20, 10th December, 1817, late at night, was found writhing and screaming from intense pain in the abdomen, every part of which was extremely tender to the touch; frequent vomiting; much pain and difficulty in making water; pulse 96 and soft. He felt pain for several days, but it had increased on the evening of the 9th, with vomiting; took laxative medicine on the morning of the 10th, which operated freely three or four times; but after these evacuations the pain was much increased.

He was largely bled; and on the 11th he was greatly relieved; pulse 90. The bleeding was repeated, and his bowels were moved by a mild enema. In the course of the day he had some paroxysms of pain, and vomited twice; but there was much less tenderness of the abdomen, except at one spot at the lower part of the right side, where it was still acutely tender; bowels open. Bleeding was repeated at night. (12th.) Pulse 90; no stool; less pain but much tenderness; very little vomiting. Two small bleedings, no more being borne; large blister, &c. (13th.) Pulse very frequent; abdomen enlarged at the lower part and tender; no stool; urine scanty and passed with much pain. (14th.) Pulse 120; no stool; no urine; belly tympanitic; rapid exhaustion with much vomiting; died at night.

Inspection.—Extensive inflammation of the ileum; the inflamed parts were extensively glued together, and pressed down into the cavity of the pelvis, by the distention of the parts above, which were also inflamed but with less exudation. Bladder inflamed and collapsed; omentum inflamed; about a pound of puriform matter in the cavity of the peritoneum.

§ VI.—Enteritis.

Case LXII.—A young lady, aged 18, (4th March, 1813,) had pain and tenderness of the abdomen with vomiting; pulse 126. After repeated blood-letting, assisted by cold applications, tobacco injections, various laxatives, &c. continued through the 4th, 5th, and 6th, the inflammatory symptoms subsided; but the bowels continued very unmanageable, and were not moved in a satisfactory manner till the 12th. From

the beginning of the attack she had complained of pain in the ear, which at first attracted little notice, but afterwards became more severe; and on the 22d she died of abscess of the cerebellum, as I have fully described in another place.* From the 12th to the 22d the bowels continued to discharge their functions in the most healthy manner.

Inspection.—The caput coli and about 18 inches of the lower extremity of the ileum were of a very dark livid colour, without any change in their structure.

Case LXIII.—A child, aged 3 years and 3 months, (12th February, 1812) had urgent vomiting and great thirst; all the liquids taken being vomited almost immediately, mixed with large quantities of a light green fluid; pulse frequent; countenance sunk and anxious; did not complain of any pain. Had been unwell for four or five days, at first slightly; bowels moved by medicine on the 9th; and on the 10th she seemed much better, and the bowels were quite open. Had complained once of pain in her bowels, but had not mentioned it again. The vomiting began on the evening of the 10th, and was very urgent through the whole of the 11th; and the bowels had not been moved since the vomiting began. The usual remedies were employed without benefit; the vomiting continued urgent, and the bowels obstinately obstructed. (13th.) Vomiting abated; medicines were retained but produced no effect. She continued through the day at times restless and feverish, at others oppressed and exhausted; and she died in the night.

Inspection.—Stomach externally healthy,—internally showed increased vascularity, and contained much dark coloured fluid. About a fourth part of the small intestine, at the upper part, was highly inflamed,—in some

* Researches on the Pathology of the Brain, Case XI.

places black and gangrenous, in others adhering and covered with false membrane. The diseased portion was greatly distended and contained much dark coloured fluid, but no feces. Immediately below this part the intestine became at once narrow and contracted, empty, and of a white colour, except a few streaks of superficial redness.

Case LXIV.—A boy, aged 10, (10th May, 1823,) was out at play in the morning before breakfast in perfect health; returned home about nine, complaining of pain in his belly. Laxative medicine was given him, and was repeated at intervals through the day without effect. In the evening, he began to vomit, and passed a restless night with frequent vomiting; the pain in his belly continuing. (11th.) Pain continued in the early part of the day, but subsided in the afternoon; was seen by a surgeon, who ordered a succession of purgatives, but they were constantly vomited. I saw him late at night, and found the pulse 120, and of tolerable strength. The pain had, in a great measure, subsided, but great tenderness of the whole belly continued, with frequent vomiting; and there had been no stool. Bleeding from the arm was employed with much apparent relief, followed by leeches, &c. The bowels were now moved by a mild enema, and he had afterwards one or two motions; but he continued very restless, and died about five in the morning, not more than 44 hours from the first complaint of pain.

Inspection.—The upper part of the small intestines was much distended; in the lower part there was high inflammation, with extensive adhesions. By the distention of the upper portion, a great part of the ileum was crammed together into the cavity of the pelvis, forming a mass of disease, the different parts of which adhered extensively to each other, to the rectum, and to the sides of the pelvis; much force being required either

to separate them from each other, or to raise them out of the pelvis. The inflammation extended over a great part of the small intestines, but the principal seat of it was the ileum; and the bladder also seemed to be affected. In the cavity of the pelvis, there was a considerable quantity of puriform fluid.

The high importance of the subject must be my apology for detailing so many cases, calculated to illustrate the pathology of this interesting and dangerous class of diseases. They seem to warrant the following practical conclusions.

CONCLUSIONS FROM THE PRECEDING FACTS.

1. Extensive and highly dangerous inflammation may exist in the intestinal canal without obstruction of the bowels; and it may go on to a fatal termination, while the bowels are in a natural state, or easily regulated by mild medicines, through the whole course of the disease.

2. No diagnosis can be founded in such cases on the appearance of the evacuations. These may be slimy, and in small quantity; they may be copious, watery, and dark coloured; or they may be entirely natural.

3. Extensive and fatal inflammation may be going on with every variety in the pulse. It may be frequent and small; it may be frequent and full; or it may be little above the natural standard through the whole course of the disease.

4. Extensive inflammation may go on without vomiting and without constant pain; the pain often occurring in paroxysms, and leaving long intervals of comparative ease.

5. Keeping in view these sources of uncertainty, our chief reliance, for the diagnosis of this important class of diseases, must be on the tenderness of the abdomen.

This symptom should always be watched with the most anxious care, whatever may be the state of the bowels, or of the pulse, or the actual complaint of pain,—and though the tenderness itself should be limited to a defined space of no great extent; for, we have seen, that with every variety in these respects, a disease may exist of a very formidable character, and be advancing to a fatal termination. A certain degree of pain upon pressure we have found attending a merely distended state of the intestine; but this differs from the acute sensibility of peritonitis in such a degree, that an attentive practitioner can in general have no difficulty in making the distinction. When the tenderness exists without distention, as is frequently the case in the early stages of peritonitis, there can be no difficulty in the diagnosis.

SECTION III.

OUTLINE OF THE TREATMENT OF INTESTINAL INFLAMMATION.

In the treatment of this most important class of diseases, the great principle to be kept in view is, that the affection which we have to contend with is simply inflammation. This inflammation may exist with every variety in the state of the bowels; we have seen them obstinately obstructed, and we have seen them easily moved through the whole course of the disease; and, when obstruction had existed, we have found it give way, and free evacuation take place, without in any degree improving the situation of the patient. Our first

great object, then, is simply to combat the inflammation; and the remedies for this purpose are few and simple. The most important is general blood-letting, repeated according to the urgency of the symptoms and the strength of the patient, aided by large topical bleeding, blistering, &c. In a considerable number of cases, I have used with evident advantage the application of cold, by covering the abdomen with cloths wet with vinegar and water, or even iced water. Injections of iced water have been proposed, and I think it probable, might be used with advantage.

In all cases of active inflammation, blood-letting can be of comparatively little avail, except it be used at an early period, and pushed to such an extent, as to make a decided impression upon the system, as indicated by weakness of the pulse, paleness, and some degree of faintness; and a practice, to which I am very partial in all urgent inflammatory cases, is to follow up this first full bleeding by small bleedings at short intervals, when the effect of the first begins to subside. In this manner, we prolong, as it were, the impression which is made by the first bleeding, and a twofold advantage arises from the practice; namely, that the disease is checked at an early period, and that the quantity of blood lost, is, in the end, much smaller than probably would be required under other circumstances. If we allow the patient to lie after the first bleeding 10 or 12 hours, or even a shorter period, the effect of it is entirely lost, and a repetition of it to the extent of 20 ounces may be required for producing that effect upon the disease, which, by the former method, might be produced by five; and, besides the disease has in the interval been gaining ground, its duration is protracted, and the result consequently rendered more uncertain. The inflammation of a vital organ should not be lost sight of above an hour or two at a time, until the force of it be

decidedly broken, and, unless this take place within 24 hours, the termination must be considered as doubtful.

The means now alluded to are those calculated for subduing the inflammation, which is our first and great object in the treatment of this disease; but there is another point which must ever be a prominent object of attention in cases of this class, namely, the state of the bowels. On this head, we have seen very great diversity; we have seen the bowels obstinately obstructed, and we have seen them spontaneously open or easily regulated; and, in both cases, the disease has run its course with equal rapidity to a fatal termination. We have found no reason to believe that the retention of feces was in itself injurious in the one case, or the free evacuation of them beneficial in the other; on the contrary, we have had evident reason to believe, that, in several cases, in which the inflammation appeared to be subdued, the action of a purgative was immediately followed by a renewal of the symptoms. Along with these considerations, we must keep in mind the fact, that, in the ordinary cases of enteritis, the action of purgatives is in general entirely fruitless; they are usually vomited as often as they are given, and consequently can only prove additional sources of irritation. I know that much difference of opinion exists among practical men upon this subject; but, upon the grounds now referred to, I confess my own impression distinctly to be, that the use of purgatives makes no part of the treatment of the early stages of enteritis; on the contrary, that they are rather likely to be hurtful, until the inflammation has been subdued. When we have reason to believe, that this has taken place, the mildest medicines or injections will often be found to have the effect, after the most active purgatives had previously been given in vain. In the general

treatment of enteritis, indeed, it is desirable to keep the bowels, if possible, free from distention; but this object may, I think, in general, be obtained by mild injections, or by the tobacco injection. I have already alluded to the precautions, with which this powerful remedy ought to be administered; it is particularly adapted to almost every state of enteritis, because, while it tends to move the bowels, it is also calculated to allay vascular action, and may thus assist in subduing the inflammation.

Before concluding these general remarks, I would briefly allude to some circumstances which often occur during the treatment of enteritis, and which are apt to embarrass the young practitioner :—

I. The pulse continuing very frequent after the inflammation appears to be subdued. In this state, digitalis may be given very freely with much advantage.

II. Cessation of the pain, sinking of the vital powers, great weakness of the pulse, and coldness of the body. These symptoms are generally considered as indicating gangrene, and consequently a hopeless state of disease. When treating of ileus, I have produced evidence that this is by no means invariably the case; for I have shown these symptoms connected with slight and recent inflammation, and I have shown them recovered from. I shall now only add the following example :—

Case LXV.—A man, aged 40, was affected with enteritis in the usual form, for which he was treated in the most judicious manner by a respectable practitioner. On the 5th day, the pain ceased; the pulse was 140, and extremely feeble and irregular; his face was pale, the features were collapsed, and his whole body was covered with cold perspiration; his bowels had

been moved. In this condition, I saw him for the first time. Wine was then given him, at first in large quantities, and, upon the whole, to the extent of from two to three bottles during the next 24 hours. On the following day, his appearance was improved; his pulse 120 and regular; the wine was continued in diminished quantity. On the 3d day his pulse was 112, and of good strength, and in a few days more he was well.

In such a case as this, there could be no doubt as to the only practice that could be adopted; but there are cases in which, at a particular period of the disease, wine is given with much advantage, though the symptoms are much more ambiguous, and it is difficult to decide upon the practice which ought to be followed. This is strikingly illustrated by the following case :—

Case LXVI.—A lady, aged 35, on the 7th day after delivery, was seized with symptoms of peritonitis, with much tenderness and urgent vomiting; respiration short and oppressed; pulse 140 and sharp. The pain was aggravated by inspiration, and by every motion of the body. She was bled and blistered, and took laxative medicine, which operated freely. After the bleeding, she was very much relieved, and could breathe without uneasiness; the vomiting subsided, and the pulse was much diminished in frequency; this was in the night. On the following day, the pulse rose to 150; the breathing was quick, short, and oppressed; some vomiting; countenance anxious; abdomen soft, and without pain or tenderness; lochia natural. Wine was now given in the quantity of a small glass every hour, and injections of beef-tea containing bark in powder and laudanum; and these were repeated as often as they were discharged, which was generally once in two hours. Under this treatment persevered in, the symptoms gradually improved. On the second day, the pulse was from 125 to 130; and on the third day from

112 to 120; but for several days she continued to take a bottle of wine in each 24 hours. For some time she suffered severely from an aphthous state of the mouth and throat, accompanied by a burning uneasiness in the stomach, and pain in the bowels. These symptoms were relieved by a decoction of logwood.

III. Hardness and tension of the abdomen, with some degree of enlargement, occurring at an advanced period of the disease. This is a very formidable symptom, and gives reason to apprehend, that the disease is passing into a somewhat chronic state, with extensive adhesions and effusion; but that this is not a necessary consequence will appear from the following case. The nature of the affection is obscure.

Case LXVII.—A young man, aged 17, was affected with enteritis in a severe form, which required much active treatment; but the case yieldly favourably, and about the 7th day he was free from complaint. On the 9th day, his pulse began to rise again, and the abdomen became enlarged, very hard and tense, and tender to the touch; the bowels open; his pulse when sitting up 120. In this state, in spite of every remonstrance, his friends carried him to the country. I expected to hear of his death, but the affection gradually subsided, and he returned to town in a few weeks in perfect health.

IV. A tympanitic state of the abdomen. This occurs in connection with several forms of the disease, and in every form of intestinal inflammation is a symptom to be watched with the most anxious attention. The most unfavourable is the true tympanites abdominalis, which arises from perforation of the intestine, and the escape of flatus into the cavity of the peritoneum. Some examples of this have been already mentioned, and others will be referred to when we come to

treat of ulcers of the mucous membrane perforating the intestine. In the early stages of enteritis, a tympanitic state may occur from a temporary derangement of the muscular action, and may subside as the inflammation is subdued. At a more advanced period of the disease, it must be looked upon with much anxiety. If it occur at this period before the inflammation has been subdued, it is generally a fatal symptom, depending upon a complete loss of the tone of the bowels; and it is commonly found to be connected with very extensive adhesions. Tympanites, however, may occur from mere loss of tone of the parts, after the inflammation has been subdued; and, in this case, it may be recovered from, though the appearance of the patient for the time is most alarming. In this state of the case, it is often impossible to ascertain with certainty on which of these two conditions of the disease the affection depends; but under these circumstances, the safe rule always is, to act upon the supposition of it being in the more favourable form, from which it may be recovered. This is to be treated by small quantities of wine or brandy given at short intervals; gentle compression and friction of the abdomen; and injections of beef tea, to which may be added considerable quantities of bark or sulphate of quinine, turpentine or tincture of assafœtida, and a moderate quantity of laudanum,—these to be repeated once in two or three hours. The bowels may be moved by very mild laxatives, such as aloetic wine or aloes and hyosciamus; but laxatives require to be given with the utmost caution. The affection is one of very great interest in a practical point of view, because the patient has very often the appearance of being almost moribund, and yet by attention may be speedily recovered. On this account, I think it will not be out of place to conclude with the following examples.

Case LXVIII.—A lady, aged about 36, a few days after her accouchment, was seized with symptoms of peritonitis, which was treated in the usual manner, by a judicious practitioner. The activity of the symptoms was subdued by two bleedings; the bowels yielded to laxative medicine, which, in fact, operated rather fully and with irritation. This was followed by a state of exhaustion, in consequence of which I saw her. I found her with a haggard and exhausted look; the skin clammy; the pulse feeble and rapid; the whole abdomen tympanitic and enlarged to the size of the last period of pregnancy; wine was now given her at short intervals, with injections of beef tea, containing assafœtida and sulphate of quinine; under this treatment she improved rapidly, and in a few days was in her usual health.

Case LXIX.—A boy, aged 6, had acute pain in the abdomen, much increased by pressure and by inspiration; short anxious breathing; pulse extremely frequent. He was bled from the arm, and took some laxative medicine, which operated, and he was very much relieved. He then did well for two days, when, on visiting him at night, I found him oppressed and restless; countenance anxious; pulse above 140; the belly enlarged and tympanitic, and painful on pressure. Injections, containing bark in powder with tincture of assafœtida, were given every three hours, aided by friction, &c. with great relief. Under this treatment the affection soon subsided, and in a few days he was able to be out of bed; but he continued feeble and sallow, with cough, bad appetite, frequent pulse, and a withered emaciated appearance. Being sent to the country, he improved gradually, but it was some months before he recovered perfect health.

The condition of the bowels, which occurred in this case, appeared to consist of mere derangement of the

muscular power, yet assumed characters which might have been considered as indicating mesenteric disease; and I believe it is an affection of frequent occurrence, especially in children, in whom it often assumes characters resembling those of fixed and serious disease. It is treated by air and exercise, tepid bath, friction of the abdomen, and vegetable bitters, as the columbo powder combined with small doses of rhubarb or aloes, or small doses of the sulphate of iron combined with rhubarb.

A tympanitic state of the abdomen, such as occurred in the above-mentiond cases, occurs also from other causes, though putting on the same alarming characters.

Case LXX.—A lady, aged about 35, had suffered for some days from a loose state of the bowels, accompanied by a good deal of pain and irritation; but the complaint was considered as a common diarrhœa, and attracted little attention. After she had allowed it to go on for several days, her abdomen began to be enlarged, and her strength to sink; and when I saw her a day or two after the first appearance of these symptoms, I found her exhausted to the last degree; countenance cadaverous; skin cold and clammy; abdomen very much enlarged and tympanitic; pulse 160, and extremely feeble. Brandy was now given her every hour, with injections of beef-tea containing powdered bark; and under this treatment with careful watching night and day, she rallied gradually, and was soon in her usual health.

SECTION IV.

ERYSIPELATOUS PERITONITIS.

In the preceding remarks on inflammation of the peritoneum, I have confined my observations to that which may be considered as the genuine form of simple acute peritonitis. But there is another form of the disease of very great interest, and, in several respects, remarkably distinct from the former. The reasons will appear in the sequel which induce me to consider it as allied to erysipelas; but I attach no other importance to the name than simply as a title to the section in the general arrangement of the subject.

In a pathological point of view, the principal character of this affection is, that it terminates chiefly by effusion of fluid, without much, and often without any, of that inflammatory and adhesive exudation, which is so prominent a character of the disease in its more common form. The effused fluid is in some cases a bloody serum or sanies; or this mixed with a proportion of pus, which separates and subsides to the bottom of a vessel in which the fluid is left at rest; in other cases it is milky or whey-coloured, or contains shreds of flaky matter; and sometimes it is found with all the characters of pus. This effusion is in some cases combined with a degree of pseudo membranous deposition; but it is in general slight, and is often entirely wanting. The appearance of the intestine varies considerably; in some cases, the surface is, for a considerable extent, of a uniform dark red colour; in

others, there is only a slight increase of vascularity ; and frequently little or no deviation can be discovered from the healthy structure. In some cases again, the peritoneal coat, or a portion of it, has a slightly thickened and softened appearance, like a part that has been boiled ; and in some examples of this form of the disease, it appears that the omentum has been a principal seat of the inflammation.

The symptoms of this affection are sometimes slight and insidious, but sometimes very severe ; and they are chiefly distinguished by the rapidity with which they run their course, and by a remarkable sinking of the vital powers, which occurs from an early period, and often prevents the adoption of any active treatment. A remarkable circumstance in the history of the affection is its connection with erysipelas, or with other diseases of an erysipelatous character. This will appear from the following examples, by which I am anxious to illustrate this affection, as it seems to present a very interesting subject of investigation.

Case LXXI.—A lady, aged 50, in June, 1823, was seized with extensive erysipelas of the left leg, accompanied by acute pain, and considerable swelling of the upper part of the foot. After six or seven days the erysipelas of the leg subsided gradually,—the swelling and pain of the foot continuing undiminished. After another day, these disappeared suddenly, and a few hours after she was seized with acute pain in the region of the stomach, which, after a short time, moved downwards, and settled with great severity in the lower part of the abdomen, and around the umbilicus. This took place in the night, and I saw her in the afternoon of the following day. She was then moaning with most acute pain, but did not complain much of pressure ; great anxiety and restlessness ; pulse about 100 ; bowels open. I advised bleeding, a blister, &c., but the former, I afterwards found, was

not done at the time. At night the pain continuing unabated, she was bled without relief. The other usual remedies were then employed, but without benefit. She continued in great pain, without any other marked change of the symptoms; her strength sunk; and she died early in the morning of the following day, being little more than 24 hours from the attack.

Inspection.—The lower half of the small intestine was of a uniform deep dark red colour, but without any exudation; the upper half was of a dull leaden colour; and the whole was considerably distended. In the cavity of the peritoneum there was a considerable quantity of bloody sanious fluid. No other morbid appearance could be discovered.

Case LXXII.—A woman, aged 30, had been ill for several days with the erysipelatous inflammation of the throat, accompanied with considerable fever. She felt better and was able to be out of bed, when, having taken some laxative medicine, she was severely pained during its operation; and in the evening was seized with most violent pain over the whole abdomen, accompanied by vomiting. I saw her on the following day, along with Dr. Begbie, and found her pulse very frequent and extremely small; skin rather cold; countenance expressive of exhaustion; severe pain and acute tenderness of the whole abdomen; some vomiting; no stool. A bleeding was attempted, but she bore very little; and it gave no relief. Blistering, opiates, tobacco and other injections, &c. were then employed without benefit. She continued in the same condition, and died in the evening of the following day, being about 48 hours from the attack; the bowels had been partially moved.

Inspection.—The bowels were in general considerably distended, and of a dark livid colour without exudation. In the cavity of the peritoneum, there was a con-

siderable quantity of puriform fluid. There was much appearance of inflammation upon the omentum, especially at the lower part, where it was for several inches highly inflamed and thickened, and had formed an adhesion to the sigmoid flexure of the colon.

In the Merchant's Hospital of Edinburgh (a charitable institution for the education of girls,) an epidemic appeared in the beginning of March, 1824. Its principal character was a slight erysipelatous affection of the throat, generally beginning with vomiting, and accompanied by slight fever; and in many of the cases, there was swelling of the glands of the neck. It spread with great rapidity, 15 or 20 girls being sometimes in bed at a time; but was in general a very slight affection, disappearing in three or four days with little treatment. The epidemic had gone on in this manner for about a week, when, on the 13th, a girl, aged 10, was affected in the same slight manner as in the other cases. On the 14th she seemed much better, and on the 15th she complained only of slight headache, on account of which she was still kept in bed. About two o'clock in the afternoon, she suddenly got out of bed in a state of incoherence, and was soon after affected with repeated vomiting and diarrhœa, by which she discharged a green and watery matter. When asked if she felt pain, she laid her hand on the right side of the abdomen about the seat of the caput coli. After vomiting repeatedly, she sunk into a state of great lowness, or almost of insensibility. When seen by Mr. Wm. Wood between four and five, she was unable to answer any question; pulse scarcely to be felt; body cold; face cadaverous; occasional vomiting continued. Stimulants were ordered, and I saw her along with Mr. Wood between nine and ten at night; she was then lying with her eyes open, and seemed to observe those about her, but made no attempt to speak; pulse scarcely to be felt;

action of the heart tumultuous and irregular; body cold; occasional vomiting; no return of diarrhœa; she died about eleven at night.

Inspection.—Extensive marks of peritoneal inflammation with slight deposition of lymph in flakes on various parts of the intestines; in the cavity of the peritoneum there was a considerable quantity of milky puriform fluid. The appendix vermiformis was large, turgid, and of a very dark colour approaching to gangrene; the brain, and viscera of the thorax were sound; and nothing unusual was remarked in the mucous membrane either of the stomach or bowels.

After the occurrence of this case, the epidemic went on in a very mild form, affecting the patients chiefly with feverishness, generally with some vomiting, and swelling of the glands of the neck. In all of them there was more or less of an affection of the throat, which presented, when looked into, an angry rawness and redness with little or no swelling; in some there were aphthous crusts, and in others a considerable turgescence of the uvula; and in a considerable number there were small angry ulcerations about the lips, with spunginess of the gums. It was still, however, in general a slight affection, requiring little treatment except confinement to bed for a few days, and gentle laxatives; and no other urgent case occurred until Sunday the 4th of April. A girl, aged 12, had been in the sick ward for three or four days with the usual symptoms, and on Saturday was considered as convalescent. On Sunday she complained of considerable pain in the bowels with frequent desire to go to stool. An opiate was given her, and afterwards some castor oil, which operated. On the 5th she still complained of some uneasiness in the bowels, but it was not urgent, and excited no alarm, until the morning of the 6th, when Mr. Wood found her complaining of severe pain, with tenderness over the whole abdomen, and the pulse

was frequent. He then bled her freely from the arm, and ordered the other usual means. I saw her along with him in the afternoon. Her pulse was 120 and rather small; abdomen tense and tender; no vomiting, and not much expression of suffering; bowels not moved since the former day; a number of leeches were ordered, with injections, blister, &c. (7th.) Bowels moved several times; stools feculent and healthy; abdomen still tense and tender when touched, but not much complained of at other times; no vomiting; pulse frequent and rather weak, so as to prevent us from using farther general bleeding; free topical bleeding was repeated with apparent relief; and in the afternoon she bore pressure much better, though the tenderness was not entirely removed. In the evening she began to sink without any other change of the symptoms, and died in the night.

Inspection.—There were extensive marks of inflammation on the surface of the intestines, with deposition of lymph in flakes in many places, and some slight adhesions; there was extensive deposition of puriform fluid in the cavity of the peritoneum; the upper surface of the liver was covered by a thin deposition of false membrane.

The remarkable epidemic referred to in the preceding observations seems to have been very analagous to the Diphtherite formerly described, though in its progress and terminations it differed considerably from the epidemic of 1826,—in which, as I have already mentioned, the disease often extended to the larynx. This termination occurred in a large proportion of the cases, and nearly the whole of these were fatal. In the epidemic in the Merchant's Hospital, there was no example of the larynx being affected, and there was no fatal case, except the two now described from this peculiar affection of the peritoneum. About the time

when this epidemic was prevailing in the Hospital I saw in private a good many cases of the erysipelatous inflammation of the throat, appearing in persons of all ages. It usually presented a general dark redness of the whole fauces, without swelling, but with aphthous crusts more or less extensive. In several of the cases, after this appearance had continued for some days, there was great uneasiness extending along the membrane of the nose, accompanied with a copious morbid secretion, and great tenderness of the membrane. The inflammation extended gradually forwards, until at last it spread outwards upon the integuments of the nose, and thence over the face in the usual form of erysipelas. These cases showed in a very striking manner the identity of the inflammation which had appeared in the three situations with different characters; namely, in the membrane of the throat with extensive aphthous crusts; in the membrane of the nose, with a copious discharge of morbid mucus; in the integuments of the face in the ordinary form of erysipelas.

The following case seems to be referable to this part of the subject, though, in some respects it differs considerably from the cases now described.

Case LXXIII.—A gentleman, aged about 50, of a feeble and broken down constitution, about four weeks before his death suffered for some days intense pain in the rectum, which terminated in an abscess; and, in connection with it, sinuses were formed along the buttocks. These were opened, and appeared to be going on favourably; and though he was a good deal confined to bed by them, he made no particular complaint until the evening of Monday the 30th of July, 1827, when he was seized with shivering followed by heat and quick pulse. On Tuesday the fever was much abated, but he had some diarrhœa and vomiting, with

griping pain in the bowels. On Wednesday the vomiting had subsided, the bowels were moderately open, and the stools were healthy; but there was much general uneasiness over the abdomen, with some hiccup, and his look was depressed and anxious. His pulse was natural and of good strength. On Thursday the hiccup continued, and gave him at times considerable pain; and he complained of much uneasiness when he brought up wind from his stomach; his pulse was still natural, and the bowels moderately open. The abdomen was not distended, but he complained of considerable uneasiness upon pressure across the epigastric region. His look was depressed, anxious and exhausted; and, without any change in symptoms, he died in the night.

Inspection.—The cavity of the peritoneum contained a large quantity of purulent matter of intolerable fœtor; three pounds and upwards, were collected besides much that was lost. The surface of the intestines was in general of a dark livid colour, but without any appearance of exudation. The right lobe of the liver, on its concave surface, was considerably softened, rugged and unequal; no disease could be discovered in any other organ. The most diligent search was made for any abscess or cavity which might have been the source of the matter, but none was discovered.

The affection illustrated by these examples differs from the usual forms of peritonitis; and, without speculating farther upon the nature of it, we may merely add, that its alliance to erysipelas seems to be an obvious and remarkable character of the disease. We have every reason to believe that inflammation of an erysipelatous character may affect the same parts which are liable to the ordinary acute inflammation, but giving rise to symptoms remarkably different. We see this strikingly exemplified in the erysipelatous inflammation of the throat, compared with the ordinary cy-

nanche tonsillaris; and there are many other facts which tend to show that erysipelatous inflammation, when transferred to internal organs, produces diseases decidedly different from the common acute inflammation of the same parts. The subject has not been much investigated, but promises some interesting results; and there is one class of diseases to which it seems to point in a peculiar manner, namely, the peritonitis of puerperal women.

I have not seen so much of this disease as can entitle me to offer a decided opinion from personal observation; but, from what I have seen, and from all the information which I have been able to collect, I have little doubt that women in the puerperal state are liable to two distinct forms of peritonitis, which, in the discussions on this subject, have probably not been sufficiently distinguished from each other. They are liable to the common acute peritonitis,—presenting the usual symptoms,—yielding, in a large proportion of cases, to the usual treatment,—and exhibiting, in the fatal cases, the usual morbid appearances of extensive pseudo-membranous deposition and adhesion. But they are likewise liable to another form of disease, in which the symptoms are more insidious, and accompanied, from an early period, by great prostration of strength, and fever of a typhoid character. This affection runs its course with great rapidity; it does not yield to, or does not bear, the usual treatment; and it shows on dissection, chiefly extensive effusion of a sanious, milky, or puriform fluid, with much less adhesion than in the other case,—often with none; and frequently without any sensible change in the appearance or structure of the parts. There is little doubt that it is a contagious disease, or that it is capable of being conveyed from one woman who is affected with it, to another who is in the puerperal state. It appears as an epidemic at particular times, being very frequent and very fatal while

it prevails; and erysipelas, or other affections of an erysipelatous character, have often been observed to be prevalent at the same time. Some of the cases which I have described under this section bear an evident resemblance to this formidable disease.

This modification of peritonitis we have seen may be fatal without any remarkable change in the organization of the parts; and there is ground to believe, that, in some cases, it admits of a cure at an advanced period by the evacuation of the matter. In such cases, we have reason to conclude, that the inflammation had been resolved by the effusion, without leaving any injury to the organization of the parts. Several cases of this kind have been reported to me, in which, after symptoms of peritonitis, chiefly in the puerperal state, purulent matter either found a vent for itself through the parietes of the abdomen, or was evacuated by tapping, and the patients recovered. I have even observed some facts which induce me to believe that, in some modifications of this affection, a certain degree of peritonitis is resolved by effusion; that the effusion is afterwards absorbed, and that recovery takes place by a process of nature alone. This, of course, cannot be ascertained with certainty; but I have seen cases, with slight and obscure peritonitic symptoms, leave a tumefaction of the abdomen with much suspicion of effusion, which after some time entirely disappeared.

SECTION V.

CHRONIC PERITONITIS.

This insidious affection is more common than persons not familiar with pathological investigations are generally aware of. It is a disease of the utmost danger, yet often extremely obscure in its symptoms, and can only be treated with any prospect of success by the utmost attention to its very earliest indications.

The symptoms of chronic peritonitis vary considerably in activity in the early stages. There is generally pain in some part of the abdomen, which may either be permanent, or only occur in paroxysms. The pain is in some cases referred to one defined space, and in others is more general over the abdomen; it is usually increased by pressure on the part, and is often much aggravated by the erect posture and by motion. In some cases, again, there is no actual complaint of pain, but a peculiar tenderness,—the patient always shrinking from pressure on any part of the abdomen. There is occasional vomiting, which in some cases becomes urgent in the more advanced stages. There is generally more or less distention of the abdomen, which is very often in some degree tympanitic; and, in some cases, defined spots of deep-seated induration may be felt on various parts of it, and these are generally tender to the touch. In a very important modification of the disease, there is no complaint of pain; the patient

merely speaks of a feeling of distention, with variable appetite and irregular bowels, and, with these complaints, becomes progressively emaciated. In many cases, indeed, the early symptoms are so slight, that no attention is paid to them until the emaciated appearance of the patient excites alarm. The abdomen on examination is then probably found tumid, and in some degree tender at various parts; and, upon questioning the patient, it is found that there has been some degree of pain for weeks or months. In other cases, there has been no actual pain, but a feeling of tenderness which gave rise to uneasiness on pressure, or when any part of dress was tight over the abdomen; but in many cases, the disease steals on to an advanced period without any complaint either of tenderness or pain.

The bowels are commonly more or less confined, but in general easily regulated by mild medicines; in other cases, laxative medicine is very uncertain in its operation, being apt either to fail of its effect, or to act too violently. Sometimes there is an occasional tendency to diarrhœa, and this is particularly apt to take place in its advanced stages; in other cases again, as the disease advances, great obstinacy of the bowels takes place. The appearance of the motions varies considerably; in general, I think they are of a pale colour and of a peculiar fœtor, but sometimes they are dark coloured, and sometimes pretty natural.

The disease may come on gradually and insidiously, without any cause to which it can be ascribed. In other cases, it supervenes upon slight attacks of more acute affections of the bowels, or upon other febrile diseases, as measles and scarlatina; it may also supervene upon injuries, as in Case LXXXI. It occurs most frequently in young persons from 10 to 15, and is, I think, less common in infants and children, though in these it is also met with occasionally, and is gener-

erally combined with disease of the mesenteric glands. In persons rather more advanced in life, it is often complicated with disease of the lungs ; and in another place I have described a remarkable case, in which it was complicated with extensive tubercular disease, both in the lungs and in the brain. The progress of the disease is generally by increasing emaciation, with small frequent pulse and hectic symptoms, sometimes with diarrhœa. In some cases matter forms and may find its way outwards, either through the parietes of the abdomen, or by the ring of the external oblique, as in Case LXXXIII.

On dissection, the bowels are generally found more or less extensively glued to each other and to the parietes of the abdomen, and the omentum is often involved in the disease. There is sometimes ulceration of the mucous membrane, and not unfrequently the peritoneum is in many places much thickened and studded with small tubercles ; in some cases again there is great thickening of all the coats of the intestine at particular parts. In many cases there are left, amid the adhering portions of the intestine, cavities full of purulent matter, which is generally of an unhealthy or scrofulous character. There is frequently disease of the mesenteric glands and of the liver or the lungs.

In the treatment of this insidious and dangerous affection, every thing depends upon endeavouring to arrest it at its very earliest period ; for after it has advanced but a little way in its progress, it is probably irremediable. It seldom assumes so acute a character as to admit of general bleeding, and we must therefore trust chiefly to repeated and free topical bleeding, blistering, confinement, rest, antiphlogistic regimen, and the mildest possible diet. When, under such treatment, the case terminates favourably, we cannot indeed decide with confidence that this formidable disease had

existed ; but we have always good reason to suppose its existence, when, in a young person, there is deranged health, with tenderness over the abdomen. All that I can say farther on this subject is, that I have seen cases terminate favourably in families, which had formerly suffered from this affection ; and that their symptoms corresponded with those which had been observed in the earlier stages of the cases which had been fatal.

The following selection of cases will illustrate this disease ; and my apology for entering so fully upon the discussion of it, is founded upon its insidious and dangerous character, and the frequency of its occurrence.

§ I.—Chronic peritonitis in its more distinct form.

Case LXXIV.—A lady, aged 32, had been affected with pain in the abdomen through the winter 1813-14, but was not confined, except sometimes a day at a time, until the middle of April, 1814. I saw her on the 4th of May, and found her affected with great pain over the whole abdomen, accompanied by some diarrhœa ; pulse about 90. Two days after this, she was suddenly seized with severe pain and tenderness over the whole abdomen, accompanied with great tympanitic distention, repeated vomiting, and such a degree of sinking of the vital powers, that she seemed to have but a few hours to live. Pulse 120, and small. Bowels still rather loose. Injections of beef tea, with the addition of laudanum and bark in powder, were now given every two or three hours, and were continued in this manner for three days. Under this treatment, she gradually improved ; the tympanitic swelling subsided ; the pulse came down to 84 ; the vomiting became less frequent,

and in a few days more subsided, so that she was able to retain food and medicine. The bowels now became rather confined, requiring the use of small quantities of laxative medicine; but they were easily acted upon, and the motions were always thin and very copious. There was still some degree of tympanitic distention of the abdomen, and she complained of pain, which was chiefly referred to the left side, near the crest of the ileum. At this place, a deep seated hardness was felt, and it was acutely painful on pressure. Under the usual treatment, she seemed now for some time to improve, but soon began to fall back again; the pulse became more frequent with hectic symptoms, loss of appetite, some cough, and increasing debility and emaciation. The tympanitic swelling continued, with the hardness in the left side of the abdomen, which was still acutely tender; but it did not give her much trouble except when it was pressed. The bowels were easily regulated, but the stools were always thin. She died, gradually exhausted, in the end of June.

Inspection.—The cavity of the abdomen presented one uniform mass, produced by universal adhesion of the bowels to each other, in which it was impossible to trace any part of the intestine. The parts appeared to be most diseased at the place on the left side, where she had complained of the greatest pain. Here the agglutinated intestines formed a broad firm surface, which, adhering by its circumference to the parietes of the abdomen, produced a large cavity, internally presenting a surface of dark ragged ulceration. Similar cavities of smaller size were found in other parts of the abdomen, some of which contained a clear gelatinous matter, and others pus. There was an extensive abscess in the left ovarium, and another smaller in the right. The stomach, the liver, and the viscera of the thorax, were tolerably healthy.

Case LXXV.—A boy, aged 10, (16th June, 1816,) complained of pain in the abdomen, which was tense and tympanitic, and, in several places, tender to the touch; bowels open; tongue clean; little appetite; pulse about 100; for a year had been delicate, and liable to swelled glands; had complained of his abdomen for several weeks. (5th July,) Little change, except gradual emaciation; belly swelled and tympanitic; pain chiefly referred to the left side of the abdomen, which was tender to the touch; bowels open; pulse from 108 to 112. (1st August,) Progressive emaciation and hectic fever; occasional attacks of diarrhœa and of vomiting. (10th.) Almost constant vomiting immediately after taking any thing; occasional diarrhœa. Died on the 16th.

Inspection.—All the viscera of the abdomen were glued together into one mass, except where their union was interrupted by cavities containing purulent matter of a scrofulous character, and presenting a surface of unhealthy scrofulous ulceration; the mass likewise adhered so extensively to the parietes, that it was impossible to open the abdomen without cutting into the cavity of the intestine. The stomach, the liver, and the bladder, were included in the adhesions, but the substance of the liver was healthy.

Case LXXVI.—A girl, aged 10. In this case, the disease went on for a year or more, and was chiefly distinguished by the peculiar and remarkable tenderness of the whole abdomen, without much complaint of pain. She was thin, and looked ill, and the pulse was rather frequent; but she was cheerful, and able to go about; her appetite was tolerable, and the functions of the bowels were natural; she made little or no complaint when her abdomen was not pressed, but she shrunk from the most gentle touch on every part of it. She went on in this manner, with little change, through

the winter and spring of 1823-4. During the summer, she began to fall off more rapidly, with cough and anasarca, which at last became very extensive; and she died in August.

Inspection.—The omentum adhered intimately to the parietes of the abdomen, so that it was separated with difficulty. There was extensive effusion in the cavity of the peritoneum. The bowels at the upper part were tolerably healthy; at the lower part, they adhered most extensively to each other, and to the parietes of the abdomen, so as not to allow of the different parts being separated or traced. The left lung was hard and extensively tubercular; the right was healthy.

§ II.—Chronic peritonitis in its more obscure form.

Case LXXVII.—A young lady, aged 16, (April 5, 1816,) for several weeks had been observed to lose flesh and strength, with listlessness and impaired appetite, but without making any complaint. She was now a good deal debilitated, and easily fatigued; had a hectic look; pulse 120; tongue rather foul; appetite bad; abdomen tumid and somewhat tympanitic; made no complaint of any pain; she only said that she felt "stuffed in the belly." She had not menstruated.

Such was the first report of one of the most insidious cases of this affection that has ever occurred to me. The patient was put upon the use of gentle laxatives, with tonics, and the tepid bath. The bowels were found in a very loaded state, and for about a fortnight she continued without any change; she was restless, and hot in the night, and languid through the day, with bad appetite, and quick pulse, but made no complaint of

any uneasiness. In the middle of April, she seemed to improve considerably; her appetite was much better, and she slept well in the night. She also improved in looks, in spirits, and in strength; but the pulse continued frequent, being generally from 100 to 120, and the abdomen retained a considerable degree of tympanitic fulness. The bowels were open, sometimes rather loose, with occasional griping pain, but no fixed uneasiness, and the motions were quite natural. In May, she began to decline again, without any particular change in the symptoms, except progressive loss of flesh and strength. There was still no complaint of pain, except at times a little griping; and the bowels were natural. In the end of May, she began to have some vomiting, and occasional diarrhœa; the vomiting became more and more frequent, until at last she could retain nothing; she died early in June, having been confined to bed only two or three days before her death.

Inspection.—The whole contents of the abdomen presented one solid mass of adhesion, in which it was impossible to distinguish one intestine from another. The mass likewise adhered extensively to the parietes of the abdomen; and, in various parts of it, there were cavities containing purulent matter, and presenting, on their internal surface, unhealthy scrofulous ulceration. There was also much purulent matter in the cavity of the pelvis. There was much disease of the mesenteric glands, and the liver was considerably enlarged. The lungs were sound.

Case LXXVIII.—A lady, aged 24, had been in delicate health through the winter, 1823-4, being affected chiefly with cough and palpitation of the heart. In the end of April 1824, these symptoms ceased, and she began to complain of pain in the abdomen, which affected her chiefly in walking; it was sometimes a sharp stinging pain, and sometimes a dull uneasiness. She

continued to go about, but her health was somewhat impaired. She had dyspeptic symptoms, occasional vomiting, irregular bowels, hysterical affections, and a long train of symptoms, which were often considered as in a great measure imaginary. On one occasion only she complained of so much pain in the abdomen that a bleeding was employed, and the pain was immediately removed. In this manner the complaint went on till about the middle of July, when she felt herself much better, and was preparing to go to the country. She was then suddenly seized with acute pain and tenderness over the whole abdomen, accompanied with vomiting, costiveness, and frequent pulse. This attack continued two days, and then subsided, having been relieved by topical bleeding and laxatives; and she then returned to nearly her former state, except that she was more reduced in flesh and strength, and her pulse continued frequent. Her bowels were now easily kept open; but the stools were thin and very offensive; she was considerably emaciated, with a look of exhaustion, bad appetite, and a frequent pulse. The abdomen was natural to the feel, except at the lower part, where there was an irregular knotty hardness, with some tenderness. In this state I saw her for the first time, along with Dr. Thomson and Mr. Newbigging, in the end of July. She was much exhausted, with a small frequent pulse, but without much suffering; the lower part of the abdomen was tumid and painful. On the following day the exhaustion suddenly increased, and she died at night.

Inspection.—The first incision through the parietes of the abdomen gave vent to a large quantity of purulent matter of remarkable fœtor, which was collected to the amount of several pounds. The lower part of the small intestines, the uterus, and the urinary bladder, were firmly agglutinated to each other, and to the parietes of the abdomen, except where they left irregu-

lar cavities, lined with a thick deposition of yellow flocculent matter, and containing a puriform fluid. In the upper part of the small intestines, there were also very extensive adhesions, but of a different character, being pale and membranous, and without any of the yellow flocculent matter, which was so abundant below. The peritoneal coat of the liver was covered by an extensive deposition of yellow flocculent matter, and there was a similar deposition on the lower surface of the diaphragm on the right side. The thoracic viscera were healthy.

Case LXXIX.—A child, aged 5 years, had been observed for some months to be rather out of health, but without any complaint that could be discovered, except that the abdomen had become somewhat tumid. The appetite was pretty good, and the bowels were regular. No other symptom was remarked, until about a week before his death, when the bowels became obstructed, with some vomiting, and great enlargement of the abdomen. I saw him, along with Dr. Begbie, a few days after the occurrence of these symptoms; the bowels did not yield to any remedies that were employed; the belly became more and more tumid; and he died about the end of a week from the commencement of this attack.

Inspection.—There were extensive adhesions of the bowels to each other, some of which seemed of old date, and others more recent. There was extensive disease of the mesenteric glands, and of the chain of glands by the side of the spine.

§ III.—Chronic peritonitis supervening upon measles.

Case LXXX.—A boy, aged 5 years, (Sept. 1813,) was much emaciated, with a dry wrinkled skin, and a small frequent pulse. He complained of constant pain in his bowels; the abdomen was a little enlarged, but soft; he had little appetite, and his bowels were irregular, being sometimes confined, and sometimes rather loose. About two months before I saw him, he had passed through measles in a very mild form; but a few days after the termination of the disease, he began to complain of pain in his belly, which had continued from that time with progressive loss of flesh and strength. Various remedies were employed without benefit. He became gradually more and more emaciated, with constant pain in the belly, and occasional diarrhœa; and died in the end of November. There had been no cough at any period of the disease.

Inspection.—In attempting to open the abdomen in the usual manner, it was found impossible, owing to close and extensive adhesions of the intestines to the parietes in every direction. They were also found to adhere so extensively to each other, that it was impossible to distinguish one intestine from another; and the intestines adhered likewise to the stomach, to the liver, and the urinary bladder. In the cavity of the peritoneum, there were found large quantities of coagulable lymph, in the form of a consistent transparent jelly. The mesenteric glands were much enlarged; and the liver was also somewhat enlarged, but healthy in its structure. The lungs were studded with numerous tubercles, but they were all in a solid state; and there was considerable effusion in the cavity of the pleura.

§ IV.—Chronic peritonitis of the colon supervening upon an injury.

Case LXXXI.—A man, aged 21, a carter, (July 1818,) was emaciated to a great degree, with effusion in the abdomen, and anasarca of the legs; some difficulty of breathing; pulse small and frequent; bowels quite open, sometimes rather loose; complained of pain extending across the upper part of the abdomen; some time before, it had been chiefly referred to the right hypochondrium, and had been treated as an affection of the liver. In the beginning of the year, he had received a blow on the abdomen, by a piece of coal which fell upon him as he was unloading a cart; and from that time he had complained of uneasiness in the abdomen, but not so severe as to confine him from his work, until some weeks after, when he received another injury by being squeezed between his cart and a wall. After this, the pain in his bowels increased, and had frequent attacks of nausea and some vomiting; but these symptoms ceased after a short time, and the complaint went on in a gradual but obscure manner, till the time when I saw him. He died in the end of July.

Inspection.—The liver was healthy. The arch of the colon, and the descending colon, were covered by an extensive deposition of coagulable lymph, and had formed most intimate adhesions to the parietes of the abdomen, and to all the neighbouring parts. They formed a mass of disease, the parts of which could not be separated from each other, and in which were included the stomach and several turns of the small intestine. The coats of the colon were much thickened, especially on the left side, where they were in some

cases half an inch in thickness. The pancreas was hard, and contained several small abscesses. In the cavity of the peritoneum, there was copious effusion of a whey-coloured fluid. The lungs were healthy.

§ V.—Chronic peritonitis complicated with disease of the omentum.

Case LXXXII.—A gentleman, aged 54, of a full habit, and previously enjoying good health, about Christmas, 1823, complained of nausea and loss of appetite. After a few days, he was seen by Dr. George Wood, who found his tongue white, his bowels irregular, and his pulse a little frequent. His nights were restless, and his general feelings extremely uncomfortable, but without any defined uneasiness, except some obscure and wandering pains extending along both sides of the abdomen, sometimes into the back, and sometimes along the sides of the thorax. He had continued in this state for about three weeks, when I saw him along with Dr. Wood in the middle of January, 1824. His look was then anxious, but without much wasting; tongue white; pulse about 96; little appetite; a good deal of thirst. He complained of an undefined uneasiness across the epigastric region, and about the sides of the abdomen, which was increased by the horizontal posture, so that he was either out of bed and dressed, or sitting in bed supported by pillows. The abdomen was somewhat tumid, with an obscure feeling of fluctuation. Immediately below the epigastric region, there was a deep seated hardness, extending across for five or six inches; and there was another hard spot of small extent, about half way betwixt the umbilicus and the pubis. Pressure occasioned little uneasiness. The bowels were

easily moved, and the motions were natural, but scanty. He had a constant feeling of nausea, which, in fact, was the principal uneasiness that he complained of.

Various remedies were employed with little benefit, and, for some time, there was little or no change in the symptoms. He then began to have occasional vomiting; his nights became very disturbed; and he frequently laid his hand across the upper part of the abdomen, as being the seat of much undefined uneasiness; his bowels continued to be easily regulated. The vomiting increased in frequency, and at last he had retching of dark-brown and black mucus. His strength then sunk rapidly, and he died in the end of February.

Inspection.—The tumour in the epigastrium was formed by the omentum drawn up into an oblong mass, nearly two inches in thickness, and internally of a pale colour and firm tubercular consistence. The intestines were of a very dark colour, and adhered extensively to each other, and to the parietes of the abdomen. The hard spot which had been felt below the umbilicus, was produced by one of these adhesions of a part of the ileum to the parietes. The peritoneum lining the parietes of the abdomen was diseased through its whole extent; in many places much thickened, and in some almost cartilaginous. Its internal surface presented a variegated appearance of dark red portions, mixed with others which were almost black; and in some places there were spots resembling small superficial ulcers. In the cavity of the abdomen there was considerable effusion of a clear serous fluid.

§ VI.—Chronic peritonitis with extensive suppuration making its way outwards by the ring of the external oblique.

Case LXXXIII.—A man, aged 40, (August, 1814,) had severe pain of the abdomen, which was hard and tense, with occasional vomiting; much wasting; bowels irregular; had been ill four or five months. A short time after I first saw him, he was suddenly seized with a swelling, which appeared at the ring of the external oblique of the left side, and extended rapidly along the scrotum. After watching the progress of this swelling for some days, the scrotum was punctured, and discharged very fetid purulent matter, in such quantity as immediately shewed a communication betwixt the swelling and the cavity of the abdomen; and pressure upon the abdomen made it flow very freely. About a week after this, a fluctuating swelling appeared on the right side of the abdomen, which was opened, and discharged much purulent matter; he became more and more exhausted, and died in the middle of September.

Inspection.—The omentum was much diseased, being thickened, ulcerated, and studded with numerous tubercles; and it adhered intimately both to the intestines, and to the parietes of the abdomen. The intestines likewise adhered most extensively to each other, and to the parietes; the peritoneum also was in general much thickened. On the right side of the abdomen, there was an extensive collection of purulent matter, which extended upwards behind the intestines as far as the liver. It had eroded the peritoneum by a small round opening, about an inch in diameter; and had spread

itself among the muscles, and under the integuments, forming the swelling which was opened on the right side. On the left side, the matter seemed to have been contained in a cavity, betwixt the peritoneum and the abdominal muscles.

PART III.

INFLAMMATORY AFFECTIONS OF THE MUCOUS MEMBRANE OF THE INTESTINAL CANAL.

The inflammatory affections of the mucous membrane of the intestinal canal present a subject of great interest and considerable difficulty. In the diagnosis of them, much attention is required in their early stages; because it is only at this period, that many of them can be treated with any prospect of success; and because, without very great attention, they are apt to be confounded with diseases of a much less dangerous character. This arises from the circumstance, that symptoms, very similar to those which proceed from extensive disease of the mucous membrane, may be produced by various irritations applied to the membrane in a healthy state, constituting two classes of disorders, very different in their nature, and implying very different degrees of danger. Thus, we may have the symptoms of diarrhœa or cholera, arising either from the presence of acrid matters, or from disease of the mucous membrane; in the one case, constituting an affection of little danger

in the other, a disease of the most alarming kind. In the former manner are produced the common diarrhœa and cholera of this country, which are seldom fatal affections; in the latter, the various forms of dysentery, and the cholera of India, one of the most formidable diseases with which the human race has ever been visited.

It is necessary to keep in mind certain sources of fallacy, in regard to the morbid appearances of mucous membranes. From numerous observations, we may now consider it as ascertained, that many of the appearances in mucous membranes, which have often been considered as marks of disease, are merely changes of colour, or accidental vascular congestions, which may take place a short time before death, or even after death. They are accordingly met with in the bodies of persons who have died of other dieases, without any symptoms referable to the bowels; and of those who have died from violent deaths, as execution or drowning, without any suspicion of previous disease. Among the appearances referable to this head, may be reckoned the following; suffusion or increased vascularity of particular parts of the mucous membrane, or a uniform redness of portions of it, more or less extensive; spots and patches of various sizes, and various colours, as red, blue, green, livid, brown, or black, without any change of texture of the part; and ecchymosis or slight extravasation of blood into the cellular texture connected with the membrane. These and some similar appearances, not connected with any change of texture, and not shewing any of the actual results of inflammation, are not worthy of any confidence in the pathological inquiry.

In entering upon this subject, therefore, I shall simply describe the principal changes, observed in the mu-

cous membrane of the intestinal canal, which we are warranted to consider as morbid.

I. Portions of the membrane of greater or less extent, shewing a uniform and high degree of redness, with slight flakes of coagulable lymph, or a more continued coating of false membrane, attached to its surface in various places. This appearance is seldom observed in this country, but it seems to mark the intense form of the disease, such as occurs in the most rapid cases of the cholera of India. It is exemplified in the Case LXXXIX and probably marks the earliest period of that form of the disease, which, in its more advanced stage, may terminate in extensive gangrene of the membrane, as exemplified in Case LXXXV. In a modification of the disease, which seems to be different from the former, the effected portion is covered by a thin uniform coating, like the crust of aphthæ ; the membrane beneath shewing a high degree of redness when the crust is removed. This uncommon appearance is shewn in Case XC. ; but the phenomena connected with it have not been sufficiently investigated.

II. The mucous membrane covered to a greater or less extent with irregular patches, of a bright red colour, and sensibly elevated above the level of the surrounding parts. These portions vary in size, being, in general, one or two inches in diameter, with sound portions of considerable extent interposed between them. They are, in some cases, covered by a brownish tenacious mucus ; in others, by flakes of false membrane ; and frequently the surface of them is studded with minute vesicles, which at a more advanced period seem to pass into very small ulcers. These are the appearances most commonly observed in the simple dysentery. In this affection, they are generally confined in a great measure to the lower part of the colon and the rectum ; when seated in the small intestine, and the colon

is healthy, the symptoms differ remarkably from those which commonly receive the name of dysentery, as we shall see in the sequel. The appearance of circumscribed elevated portions of the membrane is also met with in a chronic form, gradually fatal by long protracted disease, as in Case XCV.

III. An extensive portion of the mucous membrane exhibiting a soft consistence, of a uniform black colour, or what may be properly termed gangrene of the mucous membrane. This appearance is illustrated by Cases LXXXV, and XCII. The result of it has sometimes been the separation of considerable portions of the membrane, so as to expose the muscular coat, or even to leave the cavity covered only by the peritoneal coat, the muscular being involved in the disease.

It has not been sufficiently investigated, whether the morbid appearances described under the preceding heads indicate different periods of the same affection, or are distinct forms or degrees of the disease. The latter seems to be the more probable supposition; and there is every reason to believe, that the disease differs in its nature, by being, in some cases seated in the mucous membrane itself, in others, in the mucous follicles; and in others, by involving both these structures at once. Another form has likewise been supposed to exist, in which it is primarily seated in the cellular texture betwixt the mucous and muscular coats; but this must be considered as in great measure conjectural. The most common form which the disease exhibits in this country, when it is fatal at an early period, consists of the irregular elevated patches of inflammation, as in Case LXXXIV; and this, at a more advanced period, seems to pass into the irregular continued ulceration to be afterwards described. It appears to be a different state or form of the disease from that which terminates by the uniform covering of false membrane,

as in Case LXXXIX, or by the actual gangrene, as in Cases LXXXV. and XCII.

IV. Minute dark coloured spots spread extentively over a portion of the membrane, and each surrounded by a small but distinct areola of inflammation. This appearance I have observed only when the patient has died of another disease, the symptoms in the bowels having been nothing more than a tendency to diarrhœa. It is exemplified in Case XCVII. It is probably a disease of the mucous follicles, and the earliest period of an affection, which would have terminated in the formation of small detached ulcers, such as occured in Case XCVI.

V. Small round or oval portions of the mucous membrane, of a dark gray colour and soft pultaceous consistence. These are easily separated, and leave ulcers, or rather excavations, corresponding to their size. This appearance seems to be the termination of inflammation confined to small defined portions of the membrane; or, perhaps, is primarily situated in the mucous follicles, and involves a small portion of the membrane immediately surrounding them.

VI. The surface of the mucous membrane covered by numerous small spots of an opaque white colour which are found upon examination to be vesicles, very slightly elevated, but containing a small quantity of clear fluid. This uncommon appearance is exemplified in Case CXIV.

VII. Ulcers of various appearance and extent. The principal varieties of these seem to be referable to the following heads:

(1.) Small defined portions of excavation rather than actual ulceration, as if a portion of the membrane had been dissected out. This appearance is probably produced in the manner referred to under the fifth head.

(2.) Portions of various extent in a state of more decided ulceration; covered at the bottom with yellowish or dark coloured sloughs, and often having irregular and elevated edges. These may be detached and at some distance from each other, and vary in size from that of a sixpence to a shilling or more; or an extensive portion of the membrane may be in a state of almost continued ulceration,—the diseased surface being merely variegated by portions in a state of dark red fungous elevation, running irregularly over it, and separating the ulcerated spaces from each other. This appearance generally occurs in chronic cases, and is exemplified in Cases XCVIII, and XCIX; but is also met with in connection with recent and acute disease in the very remarkable case (Case LXXXVI.) In other examples, the elevated inflamed patches described under the second head are found covered with small ulcers, sometimes not more than a line in diameter.

(3.) Small round well defined ulcers like the deep pits of small pox, or sometimes very much resembling chancres; deeply excavated with round and elevated edges. They are generally at a considerable distance from each other, and the intervening membrane is healthy. The cases in which these occur are generally chronic, as in Case XCVI; but they are found in connection with acute disease in Case LXXXVI. The primary seat of them is probably in the mucous follicles; and the appearance described under the fourth head seems to mark their earliest stage. They are evidently quite distinct in their nature from the more extensive form of ulceration previously referred to.

(4.) Large and deep ulcers with elevated fungous edges, and a dark fungous appearance in the bottom. These differ from all the former, in not appearing in numbers covering some considerable extent of intestine; but perhaps, only one or two of them may be

met with, of the size of a shilling or upwards; and they are generally accompanied by some degree of thickening of the portion of intestine in which they are situated. The history of these is obscure. There is reason to believe that they may exist for a considerable time with very slight symptoms, or without any symptoms which lead to a suspicion of their existence. They may be fatal by hæmorrhage, as in Case CVI.; or by perforating the intestine and leading to rapid peritonitis. They are also met with in acute diseases very rapidly fatal, as in Case CVII.; but we are not prepared to say, whether in such a case they had been the cause of the symptoms, or had existed previously, and by the acute attack been hurried on to a fatal termination.

Ulceration of the mucous membrane, under all its forms, frequently goes to such a depth as entirely to perforate the intestine; and the case is then speedily fatal by a very rapid peritonitis. In such cases, we sometimes see several of the appearances now described combined in the same diseased portion, so as to shew the affection in its different stages. We may find, for example, a small deep ulcer, which has perforated the intestine by an aperture, which would admit a quill; this surrounded by a circle in a state of superficial ulceration, and this by a ring of inflammation.

VIII. Portions of the mucous membrane are sometimes found covered by small firm tubercles. Pustules resembling small pox are also occasionally met with.

During the whole progress of the various diseases of the mucous membrane, the peritoneum sometimes continues entirely healthy, so that, on first opening the abdomen, even in very protracted cases, there is no external appearance of disease. In others, there are patches of a deep red or livid colour, as if shining through the peritoneal coat, or the uniform black tinge

of actual gangrene, as in Case LXXXV,—the peritoneum itself however still continuing entirely healthy. The affection sometimes passes into extensive peritonitis a short time before death, and this happens in two ways. In the one, a small ulcer perforates the intestine, and the inflammation spreads rapidly in all directions, probably produced by the escape of the contents of the intestine into the peritoneal cavity, as is exemplified in Cases LIV, and XCIII. In the other, the peritonitis seems to take place more directly from the inflammation extending through all the coats, without any appearance of perforation. This probably occurred in Case LXXXVII.

In many of the acute cases, the diseased intestine acquires a soft and thickened appearance, which has been compared to that of boiled tripe : in the chronic, thickening is still more common,—the affected acquiring a great degree of thickness, and an almost cartilaginous hardness, which seems to involve the whole structure of the intestine. In some of these the intestine becomes contracted at the thickened portion; in others, it becomes distended into large defined cysts, with an internal surface of dark ragged ulceration; and the parietes of these cysts sometimes acquire such a degree of thickness and hardness, as to exhibit, during the patient's life, the characters of a mass of organic disease. This affection is strikingly illustrated by Cases CIII, and CV. Extensive adhesions of the peritoneal surface likewise occur, so that the whole bowels may be glued together, as in the common cases of chronic peritonitis.

The apearances now described may probably be considered as the principal morbid conditions of the mucous membrane of the intestine ; and the enumeration seems to include all those which, in the present state of our knowledge, can be considered as essential in this investigation. The inquiry has been involved in much

obscurity by a practice prevalent among continental writers, of giving a place in the pathology of mucous membranes, to mere changes of colour, and these often of very small extent. The principal varieties of these changes have already been briefly referred to; and it seems to be of the utmost consequence to have it distinctly admitted, that in our researches on the pathology of mucous membranes, they are entirely unworthy of confidence.

Among the symptoms which chiefly engage our attention in reference to the diseases of the mucous membrane, the state of the bowels is naturally prominent; but I think we are often, in such cases, too apt to form a judgment of the affection from the character of the evacuations, and to conclude that no serious disease exists, when they are feculent and of a healthy appearance. We shall see reason in the sequel to be satisfied of the fallacy of this conclusion; and to be convinced that most extensive and deep seated disease may be going on, with feculent and healthy evacuations.

The effects upon the functions of the bowels in connection with these diseases, are chiefly referable to the following heads: (1st,) A simply irritable state of the bowels, with thin feculent discharges. (2d.) Morbid discharges from the diseased surfaces of various kinds, as watery, mucous, bloody, puriform. (3d.) Various mixtures of these matters with the feculent evacuations. (4th.) Various changes in the appearance of the feculent evacuations themselves, in consequence of articles passing through in a partially digested state, or frequently almost entirely unchanged; also from the mixture of bile or other matters from the upper part of the bowels. In this general outline it is impossible to give a full account of the different appearances which the evacuations assume, in connection

with the various forms of the disease; but the following brief statement may be given, with reference to the morbid conditions which have been mentioned.

I. In the morbid condition described under the first head, there may be merely a highly irritable state of the bowels, in which the evacuations are at first thin and feculent. In other cases, we find evacuations of watery matter of a bloody or a dark brown appearance, and of great fœtor. But in regard to all the forms of the disease, it is to be kept in mind, that the peculiar discharges from the diseased surfaces are only to be distinctly recognised when the disease is in the colon; when it is in the small intestine, the appearances are disguised or modified by the mixture of these discharges with thin feculent matter, or with articles of nourishment partially changed.

II. The appearances described under the second head produce, when seated in the lower part of the intestine, the dysenteric stools commonly so called; namely, frequent scanty discharges of bloody mucus, while the natural feces are retained, or discharged only in small scybalous masses. These seem to take place when the disease is confined to the rectum and the lower part of the colon,—a form of the disease which is of frequent occurrence, and probably constitutes the dysentery of systematic writers. When the whole tract of the colon is affected, there are no scybalæ, but occasional discharges of thin feculent matter from the healthy parts above; while the more frequent evacuations consist of the bloody mucus, dark watery matters, or muco-purulent discharges from the diseased surface, coming off sometimes alone, and sometimes mixed with the feculent matter from the parts above. But when the disease is in the small intestine, and the colon healthy, the appearances are entirely different. The proper discharges from the diseased surface are then seldom seen uncombined, and their characters are dis-

guised by being mixed, either with thin feculent matter, or with articles of food or drink partially changed. The chronic form of the disease referred to under this head, I think in general produces merely an irritable state of the bowels, without any thing particularly morbid in the character of the evacuations.

III. The discharge connected with the appearance under the third head, appears to be a dark brown or black watery matter of remarkable fœtor, which has been compared to the washings of putrid flesh.

IV. The condition described under the fourth head seems merely to produce a very irritable state of the bowels, without any sensible discharge from the diseased surface, and without any thing particularly unhealthy in the evacuations.

V. The same observations will probably apply to the appearance described under the fifth head, except that it may occasionally be possible to recognise in the evacuations the softened and separated portions of the mucous membrane, which however is not probable.

VI. The discharges connected with the case more particularly referred to under the sixth head, consisted of large quantities of very firm tenacious mucus, assuming sometimes the form of tubes, and sometimes that of solid cords of remarkable density; and these were varied at other times, by the evacuation of large quantities of semi-transparent gelatinous matter. These discharges, however, had entirely ceased for a considerable time before the death of the patient.

VII. The appearances connected with ulceration of the membrane vary exceedingly, according to the extent of the disease, and the seat of the ulcers.

(1.) The ulcers described under the first and third varieties, I think merely produce an irritable state of the bowels, with gradual wasting, without any peculiar discharge.

(2.) The ulceration described under the second head

produces copious discharges of muco-purulent matter, generally streaked with blood, and sometimes mixed with shreds of flaky matter. When the disease is in the colon, this discharge comes off in large quantities,—sometimes quite uncombined, and at other times mixed with feculent matter. When it is confined to the rectum or the lower part of the colon, this feculent matter may be consistent, formed, and entirely healthy; but, when the whole tract of the colon is diseased, the feculent matter is thin, and comes off more mixed with the morbid discharge. On the other hand, when the disease is in the small intestine, and the colon healthy, the peculiar discharge will seldom be seen uncombined, as it will generally come off mixed with thin feculent matter. Portions of flaky matter may occasionally be seen in such cases floating in the evacuations; but in other cases, they have merely a thin feculent appearance, generally of a pale colour, and of a remarkable and peculiar fœtor.

(3.) The symptoms connected with the large ulcers, No. 4, are very obscure. They have been found where no symptom had indicated their existence, previously to the attack which was suddenly fatal, as in Cases CVIII. and CIX. In other cases, they appear to have been productive of deranged health, with impaired digestion and an irregular state of the bowels, but without any symptom which had distinctly indicated the nature of the disease.

The preceding outline, I am aware, may be considered as tedious and uninteresting, but it appears to be of importance in the pathology of the mucous membrane of the intestinal canal. In a practical point of view, the affections seem to arrange themselves into three classes.

I. Active inflammation of the mucous membrane, which varies considerably in its characters, according

to the extent and the seat of the disease. It may be fatal in the inflammatory stage,—by gangrene,—by ulceration,—and by passing into peritonitis.

II. Chronic disease of the membrane. This may supervene upon an acute attack, or may come on in a gradual and insidious manner without any acute symptoms. It generally goes on for a length of time, and is fatal by gradual exhaustion; and shews upon dissection fungoid disease of the membrane,—ulceration of various characters,—or thickening and induration of all the coats of the intestine. It may be fatal more suddenly by perforation of the intestine and rapid peritonitis.

III. An interesting modification of the disease may be considered separately, as a matter of practical interest, though there is no real distinction in its pathological characters. It is that in which ulcers of some extent seem to exist for a length of time in the mucous membrane, without producing any symptoms which lead to a knowledge of their existence, until they are unexpectedly fatal in the manner to be hereafter mentioned.

The phenomena connected with these various states of disease present a subject of much interest, of which I cannot hope to give more than a slight and imperfect outline.

SECTION I.

ACTIVE INFLAMMATION OF THE MUCOUS MEMBRANE OF THE INTESTINE.

The symptoms accompanying active inflammation of the mucous membrane vary considerably according to

the seat and extent of the disease. There is generally pain in the abdomen, in some cases permanent, in others occurring in paroxysms of tormina; and it is usually accompanied by considerable tenderness when rather severe pressure is made, but distinct from the acute sensibility which accompanies inflammation of the peritoneum. There is more or less irritability of the bowels, sometimes in the form of diarrhœa, with copious stools; and sometimes of painful tenesmus with frequent scanty discharges of bloody mucus. There is generally some degree of fever, with thirst, febrile oppression, and a parched tongue; but occasionally the pulse is little affected through the whole course of the disease. There is frequently vomiting, but not urgent; sometimes hiccup; and sometimes a peculiar irritability of the stomach and bowels,—articles taken exciting a burning uneasiness, succeeded by irritation, and a sensation as if they almost immediately passed through the bowels.

The calls to stool are sometimes very frequent, occurring, perhaps, every ten or fifteen minutes, with much painful tenesmus; but in other cases the disease may be going on in the most alarming manner, while the bowels are not moved above four or five times a-day. The evacuations vary exceedingly in their character; consisting in some cases, of small quantities of bloody mucus, or almost pure blood; in others, of a tenacious semi-purulent matter of a peculiar fœtor, without blood, or with only slight streaks of it; and sometimes membranous crusts are discharged like coagulable lymph in irregular portions; but in some instances, the evacuations are more abundant and consist of a watery matter of a dark brown colour, and remarkable fœtor; or of a bloody watery fluid like the washings of flesh. The natural feces are in some cases retained, or discharged only in small scybalous masses mixed with the morbid evacuations. On the other hand, it is a most important fact, in the history of the disease, that the

evacuations are, in some cases, thin and feculent, like those of a common diarrhœa; that they may continue so through nearly the whole course of the disease; or, that they may consist of thin and healthy feces in the early stage of the disease, and that the morbid discharges may not begin to appear until it has gone on for several days. In certain states of the disease, again, the evacuations are farther varied by a mixture with bile, either in a healthy or a morbid state, and by articles of food or drink which pass through nearly unchanged.

I have endeavoured to state the principles which appear to regulate these important varieties. The disease seems to exist in several different forms, in one of which the discharge from the diseased surface consists of mucus, more or less tinged with blood; in another of a red or brown watery matter; in a third, of a muco-purulent fluid; and there seems to be a fourth, in which the effect is chiefly a morbid irritability of the parts without much discharge from the affected surface. When the disease is confined to the rectum and lower part of the colon, the discharge from the diseased surface comes off uncombined, while the healthy feces are apt to be retained, or discharged only in small scybalæ, except when, by the operation of purgative medicine, natural feces are brought down from the healthy parts above. When the disease extends along the whole course of the colon, or into the small intestine, the first effect of the increased irritability of the parts appears to be, to empty the lower bowels of all their feculent contents; after which, the evacuations will consist, at one time, of the morbid discharges from the diseased surface, at another, of fluid feces from the parts above, and of various combinations of these with each other. On the other hand, if the disease be chiefly seated in the small intestine, while the colon is healthy, the morbid discharges will be less apparent, because they will sel-

dom come off uncombined. The effect in this case will probably be, a general increased action of the whole canal; and the matter evacuated will be either fluid feces, more or less mixed with the morbid discharge, articles of food or drink partially changed, or various combinations of these three substances, producing frequent changes in the appearance of the evacuations. In other cases, again, when the appetite and digestion are much impaired or nearly suspended, the first effect of the disease may be to clear the canal of all healthy feces, after which no more may be produced. In such a case, therefore, the evacuations may at first be healthy, like those of a simple diarrhœa, and afterwards consist of the morbid discharges from the diseased parts.

These statements agree with what we actually observe in the history of the disease, and on dissection. In some cases, healthy feces in a firm state may be found retained above the seat of the disease; and in case XCIV. there was fluid feces of a perfectly healthy appearance in immediate contact with the diseased surface. On the other hand, in Case LXXXIV., in which, after the period when the description begins, the evacuations consisted entirely of small quantities of bloody mucus, there was no appearance of feculent matter in the whole course of the canal. We shall also see the affection running its course to a fatal termination, with feculent evacuations of a healthy appearance, when the disease is seated in the small intestine; and in one very severe example, we shall find the evacuations sometimes feculent and healthy, and sometimes consisting chiefly or entirely of articles of food which had passed through unchanged. Bampfield remarks that he has seen milk which had been taken, pass through four hours after in the form of soft curd, moulded into shape by the action of the intestine; and he adds that it occasioned excruciating pain, and required constant fomentation to allay

the tormina which it excited in its passage through the diseased portion of intestine.

The principles now referred to indicate the sources of important varieties in the phenomena of this class of diseases; but there are other circumstances worthy of much attention. Inflammation of mucous membranes exists in different states or degrees; in some of which it has a tendency to a spontaneous cure,—the discharge from the membrane gradually undergoing certain changes, during the progress of which the inflammation subsides. This is most remarkably exemplified in the catarrhal inflammation of the bronchial membrane; but we see also that the danger of this disease, in its mildest form, is in proportion to its extent; and Laennec has well remarked, that a simple catarrh affecting the whole bronchial membrane, or a very large proportion of it, is one of the most formidable diseases that we can have to contend with. On the other hand, in the proper bronchitis, or laryngitis, we have examples of the disease existing in a different form; in which the danger is not regulated by the extent of the surface affected, but by the degree or the intensity of the inflammation. A corresponding variety appears to exist in the inflammation of the intestinal membrane. In one form, it seems to be a highly dangerous disease whatever may be its extent; while in another, it is, when of small extent, a disease of little danger, and admitting of a spontaneous cure, though it may become highly dangerous when of great extent, from the constitutional irritation by which it is attended. These two forms of the disease are well illustrated by Cases LXXXIV, and LXXXV. The affection, as it occurred in the former, would probably have been free from danger, had it been of small extent; while, as it occurred in the latter, it would have been, of whatever extent, a disease of the utmost danger.

With these varieties in the symptoms, the affection may go on for sometime before its real nature is suspected, as, under some of its modifications, it may be mistaken for a common diarrhœa, and thus may excite little attention and no alarm. When the disease is in the lower part of the bowels, it is more readily distinguished by the peculiar morbid discharges, or what have commonly been called dysenteric stools; but when the inflammation is seated in the small intestine, the diagnosis is often difficult. The disease should be suspected when there is diarrhœa with much pain, and when the pain is increased by pressure. If these symptoms are accompanied by fever, the case is still more suspicious; but fever, as I have already stated, is frequently wanting. The disease occurs both in an idiopathic form, and as a symptomatic affection. In the latter case, it appears as an attendant on continued fever, and may either exist from the commencement of the fever, or may take place at an advanced period of it. It seems occasionally to accompany or follow other febrile diseases, especially measles; and there is reason to believe, that it may supervene upon affections of the bowels which were at first free from any dangerous character,—a case beginning like a simple diarrhœa, and, after several days, exhibiting symptoms which mark the presence of this dangerous affection. In a less active form, it accompanies or follows many diseases of a scrofulous nature, forming what is commonly called the colliquative diarrhœa. When the disease is confined to the lower part of the bowels, it forms the dysentery of systematic writers; but this is only one modification of it, and not the most dangerous; and we shall see abundant reason to believe, that its characters vary in a remarkable degree, according to its seat,—and that some of the most dangerous modifications of it are those which, according to the characters laid down by sys-

tematic writers, ought to receive the name of diarrhœa, not of dysentery.

The dysentery of this country is, in many cases, a mild disease, attended with little danger; and the affection seems to be seated, in a large proportion of cases, in the rectum or the lower part of the colon. It is accompanied by tenesmus, with scanty discharges of bloody mucus, and but little appearance of healthy feces; there is generally some degree of fever, with more or less of constitutional disturbance, and frequently vomiting. Whenever such symptoms, however, occur, a disease is present which requires to be watched with much attention. While it is limited to a defined portion of the lower part of the intestine, it may be a disease of little danger; but it is to be kept in mind, that its danger is generally in proportion to its extent. If it be attended with pain and tenderness extending above the pubis, and along the course of the ascending colon, the case is becoming more precarious. If there be tenderness and tension extending along the epigastric region, so as to give reason to apprehend that the arch of the colon is involved in the disease, the case is more and more alarming; when there is reason to fear that it affects the whole course of the great intestine, the danger is extreme. There is generally, in this case, much constitutional disturbance, with quick pulse, thirst, anxiety, vomiting, hiccup, and rapid failing of the vital powers; the evacuations from the bowels vary in the manner which has been already referred to; being either mucous, watery, or feculent, or consisting of various combinations of these matters with each other.

A very interesting modification of the disease of the mucous membrane occurs in the course of continued fever. This may either have been known to exist for sometime by the usual symptoms, or it may not have

been discovered until it proves rapidly fatal. In either case the affection may be fatal by exhaustion, by peritonitis, or by hæmorrhage.

There is also a modification of the disease of very great importance, which affects infants. Though the phenomena accompanying this form accord with the general history of the affection, yet in a practical point of view it will be worthy of a separate consideration.

Inflammation of the mucous membrane of the intestine, may terminate in several ways, the most important of which are the following :—

I. It may be fatal in the inflammatory stage,—a greater or less extent of the membrane presenting numerous patches of redness, which are in general sensibly elevated above the level of the surrounding parts; and in some cases, these elevated portions present on their surface numerous minute vesicles. These are most commonly observed in the disease as it appears in infants; and at a certain period of their progress, the vesicles seem to pass into minute ulcers.

II. By gangrene, a portion of the mucous membrane appearing of a uniform black colour, and of a very soft consistence, in which the muscular coat in some cases appears to participate. Vesicles full of a putrid fetid fluid have also been observed upon the membrane.

III. By ulceration of various extent and appearance, generally mixed with fungous elevations.

IV. By passing into peritonitis or enteritis. This takes place in two ways. In the one, the inflammation seems to extend uniformly through the coats, until they are all affected ; in the other, one of the ulcers perforates the intestine, its contents escape into the peritoneal cavity, and very rapid peritonitis immediately follows.

The leading phenomena connected with the various forms of this important class of diseases will be illustrated by the following examples.

§ I.—Inflammation of the mucous membrane of the intestine, confined to the rectum and part of the ascending colon.

This is the dysentery of systematic writers, in which there is much tenesmus with scanty discharges of bloody mucus, and retention of the natural feces, or the occasional appearance of scybalæ. I have not seen it as a fatal disease; but it is evidently the affection described by Dr. Donald Monro and other writers of his period, and the disease on which Dr. Cullen has founded his definition of dysentery. Dr. Monro gives few details of individual cases; but his account of the appearances on dissection, even in the older cases, is, "in all of them the rectum was inflamed and partly gangrened, especially the internal coat; in two, the lower part of the colon was inflamed, and there were several livid spots on its great arcade." In one, whose body was much emaciated, and who had been seized with violent pain of the bowels a few days before death, all the small guts were red and inflamed; and in another, there were livid gangrenous spots in the stomach. In his account of the symptoms which attended this affection, he says, "the stools were chiefly composed of mucus mixed with bile, and more or less with blood; though sometimes no blood could be observed in them." He then describes the state of the febrile symptoms, and adds, "it often happened that after the dysentery had continued for sometime, the sick complained for a day or two of severe gripes, and then discharged along

with the stools little pieces of hardened excrement." At other times, though more rarely, little pieces of white stuff like tallow or suet were discharged; and frequently filaments or pieces of membrane were found floating in the evacuations.* In some of Bampfield's cases, the sensation of the patient was described to be as if a stake or hot iron were forcibly perforating the rectum; and in many of these, the verge of the anus in its whole circumference appeared red, inflamed and tumid. The tenesmus, in cases of this class, goes on with scanty morbid discharges from the diseased surface, while the colon above may contain much hardened feces, which are retained by the interruption of the peristaltic motion, arising from the morbid constriction of the parts below. Laxatives, in this case, bring off hard or natural feces; and the spontaneous appearance of these is the attendant on the resolution of the disease, being not the cause, but the effect or the sign, of the removal of the morbid condition of the lower part of the canal.

§ II.—The disease extending along the whole course of the colon and rectum, fatal in the inflammatory stage.

Case LXXXIV.—A gentleman, aged 60, had been for some years liable to an irritable state of bowels which affected him chiefly after exposure to cold, and was generally accompanied by mucus discharges tinged with blood. He was seized with one of these attacks, while he was at a distance from home, in September, 1827, which seems to have been more protracted than usual, and on his return home, in the end

* Monro on the Diseases of the British Military Hospitals in Germany. —Pages 61 and 63.

of September, he was again seized in a still more violent degree. When I saw him along with Mr. Gillespie, about the third or fourth day of this attack, he had a look of much exhaustion and febrile anxiety; his tongue was parched, and his pulse frequent and rather small. He complained of much general uneasiness of the abdomen, especially across the epigastric region, where there was some degree of tension and considerable tenderness. He had frequent calls to stool, and the evacuations consisted of small quantities of mucus deeply tinged with blood, and sometimes almost entirely of blood. He had occasional hiccup and some vomiting. All the usual remedies were employed without benefit; the symptoms continued unabated; the vomiting became more urgent; his strength sunk rapidly; and he died in four days more, being about the eighth from the commencement of the disease. The evacuations retained throughout the same character, without the least appearance of feculent matter, even when laxative medicine was given.

Inspection.—The whole tract of the colon appeared moderately and uniformly distended. Externally, it presented no morbid appearance, except some degree of that softened and slightly thickened state which has been compared to boiled tripe. Internally, it shewed most extensive disease of the mucous membrane. This consisted of portions of the membrane, of various forms and degrees of extent, being of a fungous appearance and bright red colour, and sensibly elevated above the level of the more healthy portions that were interposed between them; this morbid appearance, in patches separated by healthy portions of the mucous membrane, extended through the whole course of the colon and rectum; and it preserved throughout nearly the same character, without any appearance that could be considered as ulceration or even abrasion of the membrane. The small intestine and all the other parts were entirely

healthy; and there was no appearance of feculent matter in any part of the canal.

§ III.—The disease occupying the whole colon and rectum, fatal by gangrene.

Case LXXXV.—A man, aged 50, (7th Oct. 1827,) was seized with general uneasiness over the abdomen. On the 8th he took castor oil, from the operation of which he had numerous evacuations consisting almost entirely of blood. On the 9th, he was seen by Mr. White, who found him complaining of great uneasiness in the bowels, chiefly referred to the lower part, but without much tenderness. He had frequent calls to stool, with scanty discharges, which seemed to consist almost entirely of blood. His tongue was parched, but his pulse was little affected. (10th.) The pulse was still nearly natural, but there was much pain and tenderness of the lower part of the abdomen with some dysuria. The evacuations were now more abundant in quantity, and were remarkably changed in their character, being watery, dark coloured, and with a remarkable and peculiar fœtor; they are compared by Mr. White to the washings of putrid flesh. For several days from this time there was little change. The evacuations continued watery, of a dark brownish colour, and remarkable fœtor, and without any appearance of feculent matter. They varied much in frequency, sometimes occurring every ten minutes, and sometimes leaving him quiet for several hours. There was much thirst, and the tongue was parched; but the pulse continued little affected till an advanced period of the disease. He had some hiccup, and vomited a few times, but it was not urgent. I saw him for the first

time on the 15th. He was then languid and exhausted, with an anxious typhoid look, a small frequent pulse and a parched tongue. He had much uneasiness, with some tension and tenderness of the abdomen, especially across the epigastric region; there were frequent painful calls to stool, with scanty discharges of dark watery matter, some vomiting, and considerable hiccup. He died early on the 16th.

Inspection.—On laying open the abdomen, the whole tract of the great intestine, from the caput coli to the extremity of the rectum, was found to be greatly and uniformly distended. From the extremity of the rectum to nearly the middle of the arch of the colon, the intestine was of a uniform black colour, as if completely gangrenous. From the middle of the arch to the caput coli, the appearance was more healthy, but was variegated by numerous patches of a deep red or livid colour. These seemed to be deep seated, and were seen shining through the peritoneal coat, which appeared to be healthy. The large intestine being laid open, the mucous membrane at the black parts was throughout of a deep uniform black colour, very soft and easily separated; the muscular coat was black and easily torn; the peritoneal coat was healthy. These appearances were continued from the extremity of the rectum to nearly the centre of the arch of the colon; the mucous membrane then assumed an appearance more resembling that described in the former case,—being elevated into irregular patches of a dark red colour, with interspersed portions in a more healthy state. Towards the lower part of the right side of the colon, there was an appearance of erosion or superficial ulceration; and on the inner surface of the caput coli, there were several distinctly defined ulcers. The ileum, for a few inches from its junction with the caput coli, was slightly distended, and its mucous membrane was reddened; the other parts of the cana

were healthy. The inner surface of the urinary bladder, at its posterior part, shewed a considerable degree of increased vascularity.

It may be of importance to mention, that the wife of this man was affected with the same disease in a very protracted form, and had not entirely recovered from the effects of it at the end of two months. One of his sons, a boy of 14, was seized a few days after the death of his father, and died after a short illness. Two other sons more advanced in life were afterwards affected and recovered.

The two cases now described, I conceive to be of very great value in this investigation; for they shew the disease running its course in about the same period; affecting the same extent of intestine, and shewing similar constitutional symptoms,—while the actual morbid condition of the parts was remarkably different. The following case shews the affection fatal in nearly the same period, and with a remarkable extent of disease; but with a very important difference in the character of the evacuations.

§ IV.—The disease occupying the whole colon and rectum and part of the ileum.

Case LXXXVI.—A lady aged 35, on Monday 7th July, 1828, was suddenly seized with vomiting and purging, accompanied by considerable uneasiness in the abdomen; various remedies were employed without relief. On the 8th, the symptoms continuing and the pain being very severe, a bleeding was attempted, but only a very small quantity was obtained. I saw her on the afternoon of the 9th; she had then occasion-

al but not frequent vomiting; she had frequent calls to stool, and the motions were copious, liquid, and of a feculent appearance; there was much pain and some tenderness of the abdomen; pulse 120; skin hot; countenance febrile and anxious; tongue very loaded. A full bleeding was now employed with very great relief, but there was no encouragement for carrying it farther.

It was followed by blistering, calomel and opium, opiate injections, &c. but on the following day the symptoms had returned, and from this time they resisted every remedy. The pulse continued from 120 to 130, and it soon became weak, with a parched tongue and typhoid aspect, so that it was necessary to give her wine and brandy. The vomiting recurred occasionally, but it was not urgent; the evacuations from the bowels were, on some days, rather frequent; on others, not above three or four in the day; and she sometimes passed a whole night without any disturbance; but, however she might be in this respect, her aspect never improved from a febrile and anxious expression, characteristic of much disease. There was occasional pain in the bowels, but not much tenderness after the first three days. On the fourth day of the disease, I saw one motion which was scanty and consisted of bloody mucus, but the evacuations were in general copious, thin, and of a feculent appearance. In the early period of the case they presented nothing different from those of diarrhœa; about the fifth and sixth days, they became extremely fetid, and, though of a feculent appearance when they were first discharged, they separated on standing, and deposited at the bottom of the vessel, a quantity of a thin puriform fluid of remarkable fœtor, and variegated with small round spots of blood; on the two last days of her life, they became of a dark brown colour, and of a more watery consistence, with less appearance of feculent matter. She had now the aspect of an advanced state of typhus, with a small

frequent pulse and some delirium, and she died on Tuesday the 15th, being the ninth day of the disease.

Inspection.—The small intestines were externally healthy, except a tinge of redness on the lower part of the ileum; the colon had a thickened appearance, with a tinge, on various places, of a dark red colour, which seemed deep seated as if shining through the peritoneal coat; about the sigmoid flexure and the upper part of the rectum, there was slight deposition of false membrane. The mucous membrane was healthy in the stomach, and in the upper part of the small intestine. In the ileum there began to appear spots of increased vascularity, which were at first at considerable distances from each other, but afterwards became more numerous; and, for about twenty-four inches at the lower end of the ileum, the whole mucous membrane was of a uniform deep red colour, without any remarkable change in its structure. In the caput coli, the same dark red state of the membrane continued; and it was here covered by numerous well defined ulcers, some of them the size of a sixpence. In the ascending colon, there was a more irregular state of disease, consisting of wandering undefined ulceration, variegated with dark fungoid elevations of portions of the mucous membrane. In the arch of the colon, the disease assumed a different character; for it there consisted of small well defined ulcers, the size of split peas or smaller; they were quite distinct from each other, and the mucous membrane betwixt them was of a pale colour and quite healthy. In the descending colon, the whole of the mucous membrane shewed one continued surface of disease,—being of a dark brown colour, fungoid and spongy, without any defined ulceration. It is difficult to describe the appearance at this place; it might perhaps be compared to the surface of very coarse cloth of a loose fabric, and of a dull brown colour; and the mucous membrane, along the part so affected, was uni-

formly and greatly thickened. Along this portion, also, all the coats of the intestine were considerably thickened, and in some places were almost of cartilaginous hardness. This state of disease extended from near the commencement of the descending colon to within two inches of the extremity of the rectum; here it ceased abruptly, and the small portion that remained shewed only marks of recent inflammation or increased vascularity.

This very remarkable case shews nearly all the modifications of disease of the mucous membrane; and I confess that I found it difficult to believe that it had been the result of a disorder of only nine days' duration. But the body was full in flesh, and shewed no appearance of previous disease; and all that I could learn was, that, about four years before her death, the patient had an attack which was said to have been similar to that of which she died; and that she occasionally complained of some uneasiness in her bowels; but, that up to the day of the attack, she was apparently in perfect health, and able for a great deal of exercise. I likewise ascertained, that her bowels were habitually rather costive, requiring the frequent use of gentle laxatives.

§ V.—The disease in the colon fatal by extensive ulceration with peritonitis.

Case LXXXVII.—A girl, aged 8. I saw her for the first time on the 9th of January, 1826, and obtained but an imperfect account of the history of her complaints. She had been confined to bed about five days, and had repeated vomiting; but it had not been urgent, having occurred chiefly when medicine was given her. The

bowels had been loose, but not very troublesome; the motions had been sometimes mucous, but not remarkably morbid; and some that I saw were quite healthy. The belly had been for some days tense and tympanitic, with much tenderness upon pressure, but no actual complaint of pain. When I saw her on the 9th, the pulse was frequent, the face pale, but full, as if from œdema, and there was some œdema of the legs; breathing oppressed and anxious; bowels moderately open, and the stools feculent and healthy; the abdomen was tumid, and at the upper part tympanitic; and there was some tenderness upon pressure. I saw her again on the 10th, and found that the bowels had been moderately moved, and the stools were feculent and healthy; there had been some vomiting, but not urgent; the pulse was weak, and her strength was sinking; and she died suddenly in the afternoon. On farther inquiry, I learned that she had been liable to cough for several months; but that no alarm had been taken, until about five weeks before her death, when some anasarca was observed in her legs. For this she had been under medical treatment, but her general health had been so little affected, that she had danced at a children's party on the 2d of January, two days before the commencement of the fatal attack.

Inspection.—The left lung was a mass of tubercular disease; the right was tolerably healthy. In the cavity of the abdomen, there was more than a pound of purulent matter with much flocculent deposition. The spleen was enlarged and entirely enveloped in a covering of false membrane; the liver was completely covered in the same manner. The whole tract of the small intestine was contracted and healthy. The colon, through its whole extent, was distended, and of a bright red colour; it was thickened in its coats, and its appendiculæ were very turgid and of a bright red. This appearance was presented by the whole tract of

the colon and the caput cæcum; and the meso-colon was also of a bright red colour, and much thickened. Internally, the colon presented nearly one continued surface of ulceration of the mucous membrane, which was most remarkable about the sigmoid flexure, in the ascending colon, in the left side of the arch, and in the caput cæcum. There was a little of it at the commencement of the ileum, but the rest of the small intestine was healthy.

§ VI.—The disease confined to the caput coli and part of the ascending colon,—the patient dying of an affecion of the brain.

Case LXXXVIII.—A girl, aged 6, was affected with severe and obstinate diarrhœa, which reduced her to great weakness and emaciation. It subsided after three or four weeks, and was succeeded, after a short interval, by severe pain in the belly, headach, and vomiting, the bowels being then rather bound; the pulse was from 30 to 40 in a minute; the urine was high-coloured, and diminished in quantity.—The headach continued, with vomiting, and a constant spasmodic action of the right arm and leg; and after seven days, she sunk into coma, and died in two days. The pulse continued from 30 to 40, till a few days before her death, when it rose to 70, and occasionally to 80. I did not see this case during the life of the patient, but was present at the examination of the body.

Inspection.—There was considerable effusion in the ventricles of the brain, with ramollissement of the septum and of the cerebral substance surrounding the ventricles. The inner surface of the caput coli, and of a great part of the ascending colon, was of a dark red

colour, and covered with numerous patches, also of a dark red colour and fungous appearance, which were considerably elevated above the level of the surrounding parts.

§ VII.—Fungous ulceration of the caput coli and recent inflammation of the ileum, with a coating of false membrane.

Case LXXXIX.—A seaman, for whose case I am indebted to the late Dr. Oudney, was affected with dysentery, accompanied with the usual symptoms. The stools were in general copious, and varied very much in appearance, being sometimes slimy, sometimes watery, and sometimes consisting of mucus mixed with green matters of various shades. There was fever with rapid emaciation; at first, he had acute pain, and afterwards a dull uneasiness over the lower part of the abdomen; and towards the conclusion, there was a sharp pain increased by pressure, confined to a small spot on the lower part of the abdomen, towards the right side. He died in about five weeks.

Inspection.—There were some superficial ulcerations of the mucous membrane towards the lower extremity of the colon; but the principal seat of the disease appeared to be the caput coli, in which there were numerous fungous projections ulcerated upon the surface. In the ileum four inches from its lower extremity, there was a portion in a state of recent inflammation and covered with false membrane. There were small abscesses in the liver, and the mesenteric glands were enlarged.

§ VIII.—The disease in the ileum with deposition of false membrane.

Case XC.—A woman, aged about 30, in November, 1827, was received into the clinical ward of the Royal Infirmary of Edinburgh, affected with symptoms of continued fever in a very mild form; and after five or six days she was considered as convalescent. She recovered strength so slowly, however, that she was allowed to remain in the hospital; and she went on for ten days without any symptoms except weakness. She then seemed to relapse, complaining chiefly of headach and pain of the back. After this, she had sickness and a good deal of vomiting, and complained of pain, with some tenderness, referred to the region of the liver, which was relieved by topical bleeding. She still had sickness, with occasional vomiting; the pulse continued frequent and weak; her strength sunk rapidly; and she died in four days from the commencement of this relapse. There had been no diarrhœa; stools had been produced by enemata, and they were tolerably healthy.

Inspection.—In the lower end of the ileum, a portion of the mucous membrane, eighteen inches in extent, was covered by a thin uniform film like the crust of aphthæ; beneath it the membrane shewed a high degree of redness. The peritoneum covering this portion of intestine shewed some minute flakes of coagulable lymph for three or four inches. All the other parts were healthy.

For this important case I am indebted to Dr. Alison. The appearance described in it, and which also occurred in the ileum, in the preceding case, is rather uncommon. It differs entirely from the appearance of

the disease as it occurred in the colon in the former cases, and which also will be found occurring in the ileum in the cases to be next described. In the present state of our knowledge, it is doubtful whether it is to be considered as a different stage of the disease, or as a state of the inflammation altogether distinct.

The deposition of false membrane on the surface of the mucous coat, however, is described by Dr. O'Brien* as a frequent appearance in the epidemic dysentery of Ireland. It occurred in his dissections both in the large and small intestines, but seems to have been most frequent and most remarkable in the colon and rectum. He describes it in some cases as occurring in patches; but in others, the mucous membrane was covered by a uniform layer of white lymph, which was in greatest quantity in the neighbourhood of the rectum; and it adhered to the surface of the membrane in rugged folds. Dr. Cheyne has mentioned the same appearance as occurring in the small intestine, in his able account of the Dysentery of Dublin of 1818.†

The appearances to be described as occurring in the ileum in the following cases, correspond with the appearances described in regard to the colon in cases LXXXIV, and LXXXV.

§ IX.—The disease in the ileum fatal in the state of red elevated portions with incipient ulceration.

Case XCI.—A girl, aged 3 years, about three weeks before her death, was attacked with vomiting, frequent

* Trans. of King's and Queen's Colleges, vol. V.
† Dublin Hospital Reports, vol. III.

calls to stool, and pain in the abdomen; the evacuations were reported to have been frequent, slimy, and fetid. After eight or ten days, when she was first seen by the late Dr. Oudney, she had frequent irregular febrile paroxysms; she had vomiting and frequent stools, which were of a clay colour, and the abdomen was tender upon pressure. Her tongue was white, and there was urgent thirst, especially during the febrile paroxysms. In this state she continued until a few days before her death, when she became oppressed and partially comatose, with frequent screaming and great unwillingness to be moved. The pulse varied from 130 to 150, and she had frequent stools, which were now of a dull green colour, mixed with specks of yellow. The pupil was natural, and continued sensible to light, until a few hours before death, which happened on the 8th of February, 1820.

Inspection.—The ileum, from its termination in the colon to near the jejunum, was highly vascular, its minute vessels appearing as if injected. Its mucous membrane was covered with numerous irregular inflamed patches, which had a fungous appearance; they were considerably elevated above the level of the sound parts, and were covered with minute ulcerations. Some of these patches were the size of a shilling, others smaller; they were generally at the distance of an inch or two from each other, and the membrane in the intervals was healthy. The mesenteric glands were greatly enlarged and very vascular.

§ X.—The disease in the ileum fatal by gangrene.

Case XCII.—A woman, aged 25, was admitted into the Infirmary of Edinburgh, affected with pain over

the abdomen, tenesmus and diarrhœa. The pain intermitted occasionally, and was most severe on going to stool and on passing urine. The evacuations were free from scybalæ or blood. She had headach, thirst, some cough, nausea, occasional vomiting, and a pale emaciated look; pulse 72. She ascribed her complaints to cold, and they had been gradually increasing for three weeks. Various remedies were employed without benefit, consisting chiefly of opiates, absorbents and calomel. The disease went on for eight days more, and the following selection from the reports shews a state of the functions of the bowels, which, when compared with the morbid appearance to be described, presents a case of very great importance.

(2d day) Two stools; severe tormina, which were relieved by fomentation.

(3d day) Nearly free from tormina; one stool; which seemed to consist of broth which she had recently taken, little changed.

(4th day) Two scanty evacuations without griping; abdomen hard and painful; vomited once; a mild enema produced a copious discharge and relieved the pain.

(5th day) Less pain; vomited several times; one stool thin and feculent; pulse 78; took six grains of calomel.

(6th day) Two stools; one of them thin and feculent, the other much tinged with blood; much pain before the evacuations; abdomen tense and painful; pulse 80; vomited a considerable quantity of slimy matter tinged with blood, and having some purulent matter mixed with it. She took gr. viii. of calomel.

(7th day) Two stools, thin, feculent, and of a natural appearance, but preceded by much pain; vomited repeatedly some greenish slimy matter, mixed with bloody pus; less tension of the abdomen; pulse from 60 to 70; took some calomel with opium.

(8th day) No stool and no vomiting; died in the night.

Inspection.—The vessels on the stomach, duodenum and jejunum were unusually distended with blood. The ileum was livid, with some adhesions; its internal surface was quite black; and it contained dark coloured slimy matter, mixed with very fetid pus. The colon, on the left side, was found livid, with adhesion to the abdominal parietes, and to the lower part of the omentum, which also was of a livid colour; and between these parts there was much fetid pus.

§ XI.—The disease in the ileum, with ulceration, fatal by a perforating ulcer and peritonitis.

Case XCIII.—A woman, aged 38, had been ill for more than a week with fever, want of appetite, frequent diarrhœa, and much pain in the abdomen. On the 19th of June, 1819, she was suddenly seized with most violent pain of the abdomen, which began at the lower part, but afterwards extended over the whole. On the 20th the pain continued most violent, and was increased by pressure and inspiration; urgent vomiting; pulse 130. An attempt was made to bleed her, but very little blood was obtained; and soon after the pulse sunk, with coldness of the body; there was some discharge from the bowels. (21st) I saw her for the first time. Pain still severe; urgent vomiting and hiccup; no stool; pulse 140. Died in the afternoon.

Inspection.—Extensive inflammation on the outer surface of the small intestine, especially at the lower part, where there were considerable exudation and gangrene. There was extensive inflammation of the mucous mem-

brane of the small intestines, in various places; and the inflamed portions were covered with minute ulcers. At one place, at the lower part of the ileum, there was a more extensive ulcer about the size of a shilling; this was surrounded by a ring of inflammation, which was covered by minute ulcers; and in the centre of the large ulcer, there was a small opening which perforated the intestine; the outer surface at this place was of a dark livid colour.

§ XII.—The disease occurring in continued fever, with ulceration.

Case XCIV.—A girl, aged 9, was seen by Dr. Alison in December, 1819, affected with the usual symptoms of contagious fever, which was very prevalent in a narrow and crowded lane where she resided, and had affected a person in an adjoining room. From the commencement of the disease, she had diarrhœa, with griping, and considerable tenderness of the abdomen; and the evacuations were thin, feculent, and of a healthy appearance. These symptoms continued, with frequent pulse and foul dry tongue, till about two days before her death, when the diarrhœa suddenly subsided, and was succeeded by violent pain, acute tenderness of the abdomen, and every symptom of peritoneal inflammation. The duration of the case was about three weeks. I am indebted to Dr. Alison for the above outline of it, and for an opportunity of being present at the examination of the body.

Inspection.—There was considerable peritoneal inflammation, especially on the ileum, where there was extensive adhesion, with considerable deposition of flocculent matter. The intestine was also seen to be in sev-

eral places perforated by small ulcerations, through which feculent matter had escaped into the cavity of the peritoneum. The ileum being laid open, discovered a most extensive tract of disease on its inner surface, the mucous membrane being extensively eroded, and in many places completely destroyed, by round well defined ulcers, many of them as large as a shilling. This state of disease extended over the greater part of the ileum, and, in several places, its coats were considerably thickened. It contained a considerable quantity of fluid feculent matter, which was quite healthy in its appearance. The higher parts of the small intestine were healthy, and contained a small quantity of a dark green viscid fluid, like inspissated bile. The colon was collapsed, and externally healthy; internally, there were in several places, especially on the left side, patches of redness on its mucous membrane, but without any appearance of ulceration; it contained only a small quantity of healthy mucus. The other viscera were healthy.

As in this case there was every reason to believe that the original disease was contagious fever, the affection of the bowels may perhaps be considered as symptomatic. This occurred still more distinctly in a case mentioned by Dr. Duncan, junior, in his clinical reports. The patient (a woman aged 60) seemed to be convalescent from fever with petechiæ, when, about the 23d day of the disease, she was attacked with diarrhœa, without any complaint of pain; the stools fetid and dark-coloured; the pulse varying from 80 to 100. About the 7th day from the commencement of these symptoms, she began to have pain and bloody evacuations, and died on the 9th day. On inspection, the disease was found nearly in the state of simple inflammation. At various parts of the mucous membrane, from the jejunum to the rectum, there were purple patches, occurring, at first, at intervals of one or two

inches, and then running gradually more and more into each other. There was the same appearance in the caput coli, but the arch was entirely free from it. It occurred again at the sigmoid flexure; and, in the rectum, in addition to this appearance, there were numerous fungous looking patches, from a quarter to half an inch broad, and elevated fully an eighth of an inch above the surface of the intestine; they had a very vascular appearance, and their surface was covered with a thin yellowish crust.

The various observations which have been detailed in this section, appear to illustrate the principal phenomena connected with inflammation of the mucous membrane of the intestine; and they lead to some conclusions of much practical importance in regard to this interesting class of diseases.

I. It is probable that the inflammation of mucous membrane exists in various conditions. In some of these, it is dangerous, chiefly in proportion to its extent, by the constitutional disturbance with which the more extensive degrees of it are attended. In others, it seems to be highly dangerous from the intensity of the inflammation and its consequences, whatever may be the extent of the surface that is affected. This important distinction in the nature or form of the disease is well illustrated by Cases LXXXIV, and LXXXV.

II. It appears that the more intense forms of the disease may be fatal, though of small extent, by gangrene or by ulceration; and that the ulceration may perforate the intestine, and terminate speedily by extensive peritonitis.

III. We see some evidence of the contagious, or at least the epidemic character of the disease; as, in the family in which Case LXXXV occurred, five individuals were affected in quick succession, and two of them died.

IV. It is probable that the symptoms vary considererably, according to the extent of the disease, and the part of the canal which is the primary seat of it. This appears most remarkably in the character of the evacuations.

1. When the disease is confined to the rectum or the lower part of the colon, the evacuations appear to be scanty, and mucus or bloody, with retention of natural feces, or small scybalous discharges,—the dysentery of systematic writers.

2. When the disease extends through the whole of the colon, or through a considerable part of the small intestines, we may have copious discharges,—at times, of thin healthy feces, at other times, varied by mixtures of morbid discharges, and by articles of food or drink little changed. This appears to be the colonitis and the tropical dysentery of practical writers.

3. It is probable that we have the disease of still greater extent, affecting at once a great part of the bowels, especially of the small intestine, and constituting the most formidable of all the modifications of it, —the Indian cholera.

The important practical conclusion from the whole view of the subject, is that this highly dangerous disease may be going on with every variety in the appearance of the evacuations; and this conclusion is in accordance with the statements of the best practical writers. It will now perhaps be generally admitted, that in talking of dysentery, we have been too much influenced by the distinctions of systematic writers, in applying this term to an affection which is characterized by tenesmus and scanty discharges of bloody mucus. We have seen that such a modification of the disease does exist, but practical writers, of the first authority, describe another form of the affection, in which the evacuations are copious, and vary exceedingly in appearance, at different periods of the disease,—being some-

times dark, watery and sanious, and sometimes quite natural. Sir James M'Grigor has particularly remarked, that the tropical dysentery which was fatal to the troops under his inspection, differs remarkably from the dysentery of Cullen, and ought rather to belong to the form of disease which he has classed with diarrhœa. "I have ever," he adds, "found difficulty in distinguishing dysentery from diarrhœa, and I am inclined to think, that in Cullen's definition of diarrhœa, he meant tropical dysentery." The testimony of Dr. Ballingall is strongly in favour of the same important fact. In his description of that formidable modification of the disease, which he has termed colonitis, he distinctly describes the evacuations as being in the early stage of the disease generally copious, of a fluid consistence, and without any particular fœtor. In a private communication, in reply to certain queries which I addressed to him on this subject, he farther states, that "at this period of the disease, the evacuations differ only in consistence from healthy feces; as the disease advances, important changes take place in this respect, the evacuations becoming more scanty, and of a morbid appearance," that is, probably, after, by repeated evacuations, the canal has been cleared of healthy feces, and the subsequent evacuations consist chiefly of the morbid discharges from the diseased parts. This is probably the state of the disease referred to by another intelligent practical writer, when he says, "I had been taught to believe that the proper dysentery, or that which is most distinct from diarrhœa, is the most formidable disease, but I found, contrary to expectation, that the dysenteries which began with diarrhœa, often proved the most violent."* Now, in the dysentery of Cullen, as described by Dr. Donald Munro, the primary seat of the disease appears to have been the rectum and

* Dewar on the Diarrhœa and Dysentery as they appeared in the British army in Egypt.

the lower part of the colon,—often the rectum alone ; while, in the colonitis of Dr. Ballingall and the tropical dysentery of other writers, the disease extended through the whole course of the colon, and often affected a considerable part of the small intestine. If we are asked, therefore, what is the difference betwixt diarrhœa and dysentery, we must reply, that it consists in the nature of the disease, and can be learned only from a diligent attention to the concomitant symptoms, not from the character of the evacuations. Diarrhœa is an increased action of the canal, produced by various irritating causes applied to the mucous membrane in a healthy state,—the highest degree of it is the cholera of this country, which may be dangerous by the rapid exhaustion with which it is sometimes accompanied. Dysentery is a similar state of increased action, arising from inflammation of the mucous membrane ; and the highest state of it appears to be the cholera of India. Dysentery may in some cases be distinguished by the morbid discharges from the diseased surface ; but these are often entirely wanting, or are so mixed up with the feculent evacuations as not to be recognised ; and in point of fact, it will be found that the cases in which the evacuations most nearly resemble those of diarrhœa, are very often the most untractable and most dangerous.

Dysentery is often accompanied by diseases of neighbouring organs, especially the liver, in which are found in some cases abscesses, and in the protracted cases, chronic induration. These are probably to be regarded as accidental combinations, though they may considerably modify the symptoms. It has likewise been supposed, that impeded circulation through the liver may lead to disease of the mucous membrane by accumulation of blood in its more minute vessels ; but

this must be considered as in a great measure conjectural.

Dysentery was formerly supposed to have an intimate dependence upon the liver, and a modification of it has been described under the name of hepatic dysentery. By such a distinction I can understand nothing more than the fact, that a patient may be affected at the same time with dysentery and disease of the liver. Dysentery is a disease of the mucous membrane of the intestine; and that in patients affected with it, the liver is frequently diseased, is a fact of much practical importance; but this does not seem sufficient to establish any connection betwixt the two diseases, and it seems to be now ascertained that the connection is incidental. I have never seen the liver affected in the dysentery of this country, except in one or two chronic cases to be afterwards mentioned. It seems to be of more frequent occurrence in Ireland, and still more in India; but in the dysentery which was so fatal to the troops at Rangoon in the Burmese war, Mr. Waddel states, that he did not find disease of the liver in any one of his dissections.* I am also informed by Dr. Knox of this city, that he had opportunities of examining the bodies in sixty-four cases of chronic dysentery from India, Ceylon, and the coast of Africa, and that he found the liver diseased in two only of all this number. We hear, indeed, a great deal about functional disease of the liver, which leaves no morbid appearance to be discovered on dissection; but this is a mere hypothesis to which no importance can be attached in a pathological inquiry.

The urinary bladder is often affected in dysenteric cases, with pain, dysuria, or retention; and in old cases of chronic dysentery, we may find almost all the viscera more or less diseased, and perhaps extensively agglutinated together by chronic peritonitis.

* Transactions of the Medical and Physical Society of Calcutta, vol. iii.

SECTION II.

OF THE CHRONIC DISEASES OF THE MUCOUS MEMBRANE.

The chronic diseases of the mucous membrane may be left as the effect of an acute attack, or they may come on gradually in a chronic form. They present to us chiefly the following varieties of morbid appearances.

I. A greater or less extent of the membrane covered with irregular patches of a dark red colour, and fungous appearance, sensibly elevated above the level of the surrounding parts.

II. Small well defined ulcers, more or less numerous; often at considerable distances from each other, and not larger than the diameter of a split pea, the intervening membrane being entirely healthy.

These two modifications of the disease I think are generally characterized by long continued diarrhœa, without any thing particularly morbid in the appearance of the evacuations, except that they are always fluid, and have often a peculiar fœtor. There seems to be little discharge from the diseased surface, or not sufficient to impart a character to the evacuations.

III. An extensive tract of the membrane, shewing one continued surface of disease, in which ragged irregular ulceration alternates with fungous elevations, and with other parts from which portions of the membrane appear to be removed. When this form of the disease occurs in the colon, there are copious evacuations of morbid matter from the diseased surface, which are sometimes puriform, and sometimes consist of a mixture of a tenacious puriform fluid, with mucus, or semi-gelatinous matter; and the whole is often deeply tinged

with blood. According to the extent of the disease, this discharge may come off uncombined and in considerable quantities; or it may be mixed with healthy feces. When the disease is confined to the lower part of the colon or rectum, we may have the feces coming off in a solid, or even a hardened state, but generally mixed with more or less of the morbid discharge; and, at other times, we may have the discharge coming off in considerable quantities without any appearance of feculent matter. When the disease extends along the whole course of the colon, the feces generally come off in a liquid state, and, in this case, we may have the evacuations consisting sometimes of thin healthy feces, more or less combined with the morbid discharge; and, at other times, we may find the morbid discharge coming off without any appearance of feculent matter. When the disease is in the small intestine, we seldom see the peculiar discharge uncombined; it seems either to be in smaller quantity, or to come off so mixed with fluid feces as not to be easily distinguished. This form of the disease, in which the ulceration is confined to the small intestines, seems to be of frequent occurrence in phthisical cases; and indeed it appears probable, that, in some of these, it is the primary disease, and that the affection of the lungs takes place at a subsequent period. This probably occurred in cases C. and CI.

IV. The other coats partaking of the disease, and a portion of the intestine of greater or less extent, becoming thickened and indurated, often with adhesion to the neighbouring organs, or to the parietes. In some cases, the part so affected becomes contracted, with great diminution of its area; in other cases, it is distended into a large cyst, with firm and hardened parietes, giving externally the feeling of a mass of organic disease.

The symptoms connected with these various states of disease vary considerably in different cases. After the affection has continued for some time, we generally find the patient considerably emaciated, often with a peculiar withered look. There is generally an untractable diarrhœa, which in some cases is permanent, and, in others, occurs at short intervals,—continuing for a few days at a time, and alternating with costiveness. In some cases the appetite is good, or even voracious; but, in general, it is variable and capricious, with indigestion and great uneasiness after eating; and sometimes every thing that is taken into the stomach produces a peculiar uneasiness, which passes downwards into the bowels, and is not relieved until after repeated evacuations. If by opiates or astringents the diarrhœa be restrained, the uneasiness in the stomach is generally increased, and in some cases vomiting is excited. In other cases, vomiting regularly alternates with the diarrhœa,—the patient perhaps being for a few days at a time affected with frequent vomiting, and then for a few days with diarrhœa without vomiting. The remedies given in such cases to alleviate one symptom generally lead to the other; or these may alternate without any interference. There is commonly pain in the abdomen, but it varies much both in degree and duration; in some cases, it only appears in the form of tormina, preceding the evacuations, and in others, it is more permanent and is increased by pressure.

Some of the chronic cases appear to go on for a considerable time without much disturbance of the general health; but in others, there is much weakness and emaciation, frequently with hectic paroxysms; and sometimes there is a peculiar rawness and tenderness of the mouth and fauces, with aphthæ or minute ulcers, often accompanied by a tenderness of the whole œsophagus, and a painful burning sensation in the stomach, produced by almost every thing that is swallowed.

The appearance of the evacuations varies in the manner which has been already stated; so that no diagnosis can be founded upon them. They sometimes consist, in a great measure, of bloody puriform matter, and of various combinations of this discharge with thin feces, or with articles of food or drink partially changed; but in many cases, they will be found to consist, through the whole course of the disease, of fluid feces without any mixture of morbid discharge. In some cases, again, there are discharges of venous blood, which may come off either in the form of coagula, or of a dark pitchy matter, giving a black or dark brown colour to the whole of the matter that is evacuated. In the cases, again, in which there occur thickening and induration of the coats of the intestine, there is frequently a complete loss of the muscular power, so that they pass into perfect ileus.

These various modifications of this very interesting class of diseases will be illustrated by the following examples.

§ I.—The disease fatal, with elevated red patches without ulceration.

Case XCV.—A gentleman, aged about 50, had been for several years liable to a loose state of his bowels; it attacked him most frequently in the night time, and often obliged him to get up several times in the night. His general health, however, was not much affected, until a few months before his death, when the diarrhœa became more severe, and resisted every remedy. He now became pale and emaciated, with bad appetite and bad digestion, and died gradually exhausted.

Inspection.—The liver was enlarged, pale, and tubercular. The intestines were externally healthy; internally, the mucous membrane was in many places elevated into irregular portions of a dark red and fungous appearance. These portions were observed through the whole tract of the canal, but were most numerous in the small intestine; the intervening mucous membrane was of a healthy appearance, and there was no ulceration observed in any part of the canal.

§ II.—Numerous small detached ulcers, the intervening membrane healthy.

Case XCVI.—A lady, aged 35, died in April, 1818, after having suffered for nearly four years from a diarrhœa, which had resisted every remedy. I saw her only a few weeks before death, and found her pale, withered, and emaciated, with frequent pulse, slight cough, and considerable uneasiness in the abdomen. The diarrhœa occurred several times every day; and the evacuations were thin, feculent, and of a healthy appearance. The abdomen was to the feel soft and natural; she had no vomiting; the cough was not severe, and had commenced only within the last year. At the commencement of the complaint, she had suffered much from pain in the bowels, and occasionally through the whole course of it; but it was not constant, and not confined to any particular part. For some time before death she had aphthæ of the throat.

Inspection.—The bowels were externally healthy, except in several places of the small intestine, where there were large spots of a dark red colour, which seemed to be deep seated as if shining through the peritoneal coat. At the places corresponding with these

spots, the mucous membrane was elevated into patches of a fungous appearance, and deep red colour; and on these portions, there were numerous small oval ulcers, the bottoms of which were smooth and pale, while the parts around were of a dark red. At these ulcers, the intestines, when held up to the light, were semi-transparent; they were found wherever the dark fungous appearance existed, and this was over a considerable part of the small intestine, in irregular portions, some of them six or eight inches in length, the intervening membrane being healthy. The colon was externally healthy; internally there were many small ulcers which had a different character from those in the small intestine. They were more distinctly ulcerated at the bottom; few of them were larger than the diameter of a split pea, but each of them was surrounded by a firm elevated margin, without any discoloration of the surrounding parts. They were chiefly observed in the ascending colon and in the arch. On the inner surface of the stomach, near the pylorus, and of the œsophagus through its whole extent, there were numerous very minute superficial ulcers, of an oval shape, and scarcely larger than the diameter of a pin's head. The lungs were tubercular, and in the left there were several small abscesses. The other viscera were healthy.

Perhaps we may have some grounds for supposing that, in this form of the disease, the ulceration may be primarily seated in the mucous follicles; and that, in the form in which it appeared in the small intestine in the preceding case, it was accompanied by disease of the surrounding mucous membrane, while in the colon the membrane surrounding the ulcers was healthy. This is mere conjecture, and it is a point of no practical importance. The appearances described in the following case probably indicate the earliest stage of this form of the ulceration, and, had the patient not died

of another affection, would probably have passed into a state of disease similar to that which has now been referred to.

Case XCVII. A girl, aged 7, about the 22d of July, 1826, complained of pain in the bowels, with diarrhœa, and some vomiting. These symptoms were relieved by the usual remedies, but she still complained of pain in the bowels, and had some cough. After these symptoms had gone on for a few days, she began to be affected with disease of the brain, of which she died on the 10th of August.*

Inspection.—In the mucous membrane of the intestine, especially at the lower extremity of the ileum, there were observed numerous minute black spots, at some distance from one another, each of which, when viewed by a lens, was found to be surrounded by a minute circle of inflammation.

§ III.—Extensive continued ulceration of the mucous membrane of the colon.

Case XCVIII.—A young lady, aged 17, had been liable, from an early period of her life, to an irritable state of her bowels, but the affection had assumed a more fixed and alarming character about the beginning of the year 1827. She at that time became affected with more constant uneasiness in the abdomen, and a tendency to diarrhœa, with considerable irritation; and after sometime, the motions began to exhibit a very unhealthy character. She became feeble and exhausted, with a quick pulse and hectic paroxysms; and a great

* See the Author's Researches on Diseases of the Brain, Case XXVI.

variety of treatment was employed through the spring and summer without benefit. I saw her, along with Mr. Alexander, in September. She was then much exhausted ; had a feeble and rapid pulse, little appetite, and disturbed feverish nights, with considerable perspiration. She had much uneasiness extending over the whole abdomen, with some tenderness, and frequent calls to stool, accompanied by much pain and irritation. The motions sometimes consisted almost entirely of a tenacious puriform matter streaked with blood ; at other times, of thin feculent matter with much of this puriform discharge mixed in it, and occasionally, there was healthy feculent matter of considerable consistency. After using some remedies without benefit, she began to take a strong decoction of cusparia combined with nitric acid and small doses of laudanum ; under the use of this the puriform discharge entirely ceased ; but she continued to have much uneasiness in the abdomen, with frequent stools, which were thin, feculent, and healthy. Her strength sunk gradually, and she died in October.

Inspection.—The colon externally had a soft and slightly thickened appearance, and there were patches of a deep seated redness shining through its peritoneal coat. On laying it open, its inner membrane presented one continued diseased surface through its whole extent. There were deep abrasions in some places, from which portions of the mucous membrane appeared to have been entirely removed ; at others, more superficial irregular ulcerations of various extent ; and, in many places, round well-defined ulcers ; and the whole was interspersed with portions of a dark reddish brown colour in a state of fungous elevation. Through the whole extent of the colon and rectum, there was no spot that presented a healthy appearance ; but the small intestine and all the other viscera were entirely healthy. In the sigmoid flexure of the colon, there

was a small portion where the intestine was considerably thickened in its coats, and of almost cartilaginous hardness.

Case XCIX.—A gentleman, aged 70, had been for nearly twenty years liable to an irritable state of his bowels, with sudden calls to stool, which often obliged him to retire suddenly from company, or, when walking out, to retire behind a hedge. He had several times recovered good health for a short time, especially after the use of some of the saline mineral waters. He had also suffered from calculus, but his general health was so little impaired, that, three years before his death, he underwent the operation of lithotomy, and had a rapid recovery. When I saw him a few weeks before his death, he was feeble and confined to bed, with frequent calls to stool. The motions were sometimes thin, feculent, and natural; and sometimes consisted of a whitish muco-purulent matter of a peculiar fœtor, about an ounce of which was generally discharged at each evacuation. He died gradually exhausted.

Inspection.—The small intestine was entirely healthy. The whole tract of the colon was diseased; its coats were much thickened, and its mucous membrane presented one continued surface of ulceration through its whole extent. This, in some places, consisted of a continued irregular surface of ulceration; in others, of a thickened and dark coloured state of the membrane, which was studded with small round defined ulcers.

See also another very remarkable example of extensive ulceration of the colon, in Case CXXII, in which it was complicated with extensive disease of the liver. The peculiarity of this case was, that there had been no symptoms in the bowels until three weeks before death.

§ IV.—Extensive continued ulceration in the small intestine.

Case C.—A lady, aged 27, had suffered for a considerable time from a chronic affection of the ankle joint, which never assumed any alarming character, and ultimately got well. It had, however, prevented her from taking exercise, and, during the course of it, she began to be affected with diarrhœa, for which she took a variety of medicines without permanent advantage. This had gone on, in a greater or less degree, for about two months, when she was first seen by Dr. Beilby. The stools were then frequent, scanty, light coloured, and very offensive, but without any thing peculiar in their character; they had at one time been occasionally bloody, but this had disappeared. There was considerable emaciation; the pulse was rapid and feeble; the abdomen was full and tense, but not tender; there was some cough, which was quite recent and without expectoration. Various remedies were given with temporary benefit; the diarrhœa was restrained for a time, but returned with severity, and the pectoral symptoms increased; her breathing was easily hurried; she became more and more weakened and emaciated; and died about two months from the time when Dr. Beilby saw her, or four months from the commencement of the diarrhœa. When I saw her, a few weeks before her death, she was much emaciated, and the pulse was small and very rapid; there was nothing unhealthy in the character of the evacuations, and they were easily restrained within a very moderate degree of frequency. The abdomen felt rather tense, but without tenderness. The cough was but trifling, and there was to the last very little expectoration, and of no unhealthy character.

Inspection.—In the right lung there was a large abscess in the upper part, and in the other parts there were numerous smaller abscesses, with tubercles in various stages of their progress. The left lung was in a similar state, except that the abscesses were fewer in number, and there was one cyst of a large abscess empty. The small intestines adhered extensively to each other, and to the parietes of the abdomen; and their inner surface presented one continued series of ulcers of various extent, many of them of considerable depth, with defined and elevated edges, others more superficial and irregular. The intervening portions of the mucous membrane were of a dark red colour. The Fallopian tubes were greatly enlarged, and filled with cheesy matter.

Case CI.—A gentleman, aged 19, about four months before his death, began to be affected with slight febrile paroxysms, and an unhealthy state of his bowels. His stools were in general not above two in the day, but were always thin, light coloured, and remarkably fetid. This went on for two or three weeks, when, under some treatment which was adopted, his stools became formed and more natural, but they were often slightly tinged with blood. Soon after this, he was exposed to cold, and was seized with much griping and frequent watery stools, which continued for two days. This attack left him weak, and he had feverish paroxysms in the evening. He had still generally no more than two stools daily, but they were always thin, and remarkably fetid. He took a good deal of food, but wasted progressively. He had slight cough, which was chiefly observed during the night, and seldom in the day; his pulse was constantly quick and small, with flushings in the evening, and perspiration in the night, but the latter afterwards ceased. I saw him about a month before his death; he was then weak and much emaciated, with a small

rapid pulse, slight cough, and very little expectoration. There was some distention of the abdomen, with considerable tenderness; he had regularly about two stools daily, which were sometimes thin and feculent, without any thing unnatural in their appearance, except a very remarkable fœtor; at other times, there were mixed with them flakes of a yellow curdy matter. He died gradually exhausted, without any change in the symptoms, except considerable oppression of his breathing. His cough was never severe, and there was very little expectoration to the last.

Inspection.—The lungs were most extensively tubercular, with numerous vomicæ. In the upper part of the left lung, there was an abscess larger than an orange, full of a sanious fluid mixed with broken down tubercular matter. The bowels were externally healthy; internally, nearly the whole tract of the small intestine was covered by a series of ulcers. They were in some places small and distinct, being scarcely larger than the diameter of split peas; in other places, many of these had run together, forming considerable spaces of continued ulceration. The colon was healthy.

§ V.—Ulceration of the mucous membrane, with thickening and induration of the coats of the intestine.

Case CII.—A girl, aged 13, about a year before her death, began to be affected with pain of the abdomen and frequent vomiting. The bowels were at first natural, but soon became loose; and from this time she was almost constantly affected either with diarrhœa or vomiting, and sometimes with both at once. She became gradually emaciated, but was not confined to bed

until a month before her death, which happened in June, 1814. When I saw her about a week before she died, she was emaciated to the last degree, with some cough and a small frequent pulse. She had still frequent diarrhœa and vomiting, and complained of constant pain in the bowels, which was increased by pressure, but the abdomen was soft and collapsed.

Inspection.—The caput coli was dark coloured, hard and much thickened in its coats; internally, it was much eroded by ulceration; the disease extended, in the form of numerous smaller ulcers, about three inches along the ascending colon; and the valve of the colon was destroyed by the ulceration. The lower end of the ileum, to the extent of about eighteen inches, was distended, thickened in its coats, externally of a reddish colour, and internally covered by numerous well-defined ulcers, varying in size from the diameter of a split pea to that of a sixpence. The lungs and all the other viscera were healthy.

This case shews the disease in a form analogous to that which has been illustrated by the preceding examples, and differs from them only in being complicated with the thickened and hardened state of the parietes of the intestine at the part affected.

It is by this thickening of the intestine at length destroying muscular action, that the disease sometimes passes into obstinate costiveness or ileus. A gentleman, whose case was communicated to Dr. Munro by Dr. Sanders, had been liable for twenty years to heartburn and occasional vomiting, and generally had five or six liquid stools every day, which were sometimes slimy and streaked with blood. He was afterwards affected with such obstinate costiveness, that he had no stool for nine days. After this, the diarrhœa returned with vomiting, and he died at last with great distention of the abdomen and obstinate costiveness. The intestines

were found extensively adhering to each other; and a large portion of the ileum was distended, very much thickened in its coats, and internally covered with various tumours, indurations, and ulcers.

But the disease exists in another form, in which the symptoms are remarkably different, and often very obscure. The peculiarity of these cases seems to depend upon the disease being very limited in extent, so as not to interfere materially with the general action of the canal. The phenomena connected with some of these cases are very remarkable; the principal modifications of them will be illustrated by the following examples.

Case CIII.—A naval officer, aged 53, in the beginning of the year 1821, fell in walking down some steps, and struck his left side against the corner of one of them, about half-way betwixt the ribs and the spine of the ileum. No violent symptoms followed at the time, but he continued to feel some uneasiness at the part, which varied very much in degree at different times, but was never entirely gone. After some time, he began to have various dyspeptic complaints, with loss of flesh, and his general health was considerably impaired. He then went to Cheltenham, where he got considerably better, but returned home, and, having lived rather freely, became worse again. After a considerable time had passed in this manner, a swelling was perceived in the left side of the abdomen, which was by some considered as an enlargement of the spleen, and by others, as a disease of the liver. He now went through several courses of mercury, by which his strength was considerably reduced, but without any improvement in his complaints. His bowels had hitherto been in general pretty natural, but sometimes rather loose, and occasinally he had passed by stool considerable quantities of coagulated

blood. These discharges had generally been preceded by a good deal of pain in the left side. The disease had gone on in this manner for about eighteen months, when he came to Edinburgh in the beginning of September, 1823, and I saw him for the first time. He was then much emaciated, with a sallow complexion, a small frequent pulse, great weakness, and considerable anasarca of his legs. His belly was tumid, and there was considerable but not severe uneasiness in the left side, immediately above the crest of the ileum. At this place a firm defined deep-seated swelling was perceptible, which did not extend into the region of the spleen, and was evidently too low down to be considered as a disease of that organ; and, on repeated examination, it was distinctly perceived to vary sensibly in size on different days. It was, however, so firm as to convey the impression of a mass of organic disease. His bowels were moderately open; the stools were thin and very dark coloured, with an occasional mixture of blood. After he had been in Edinburgh for ten or twelve days, he was seized with vomiting, which had never occurred before; his bowels became confined, with great pain in the left side, and much uneasiness extending over the whole abdomen. His strength now sunk rapidly, and he died in three days.

Inspection.—The swelling in the left side was found to be a disease of the descending colon, a portion of which was dilated so as to form a large irregular cyst, and the parietes of the cyst were thick and very hard, so as to be at some places almost cartilaginous. Externally, the cyst adhered extensively to the parietes of the abdomen; internally, it presented a continued surface of dark coloured fungous ulceration, with many elevations and depressions. The disease was entirely limited to the part forming the cyst, which was between four and five inches in diameter. The intestine, both immediately above and immediately below, was entirely

healthy, and communicated freely with the diseased cavity. The spleen was quite healthy; the liver was tubercular but not enlarged.

Case CIV.—A lady, aged about 35, was affected with frequent attacks of vomiting and severe pain in the epigastric region. A variety of treatment was employed with little or no benefit; and at length she could retain nothing upon her stomach except liquids in very small quantities. A succession of blisters upon the epigastric region seemed now to give considerable relief, and the vomiting ceased after the complaint had gone on for several months. She continued however to complain of violent pain, which was always referred to the epigastric region; but nothing could be discovered on examination, either in the seat of the pain, or in any part of the abdomen. The bowels were natural or easily regulated; the pulse was little affected; but she could take almost no nourishment. In this manner her strength sunk gradually, and she died in a state of extreme emaciation, about a year from the commencement of the complaint, and about three months from the time when the vomiting ceased.

Inspection.—No disease could be discovered in the epigastric region, except some enlarged glands lying behind the stomach. The bowels also were healthy except the caput coli, which was throughout much thickened in its coats, in some places cartilaginous, and internally presented one continued surface of dark fungous ulceration.

Case CV.—A lady, aged 45, was affected with a hard and painful tumour, which was felt arising out of the hollow of the os ilium of the right side. When I saw her in June, 1816, she was much exhausted, with extensive anasarca of both the lower extremities, but in the greatest degree in the right; pulse small and

frequent; no appetite. The bowels were natural or easily regulated, sometimes rather inclined to be loose; but in no considerable degree. She had been in bad health about three years, having been first affected with a fixed pain in the right side; and the tumor had been observed for about two years. It had been considered as a disease of the ovarium, and a variety of treatment had been adopted without relief. She suffered constant pain in the tumor, without any other defined symptom, except the anasarca of the lower extremities; and died gradually exhausted in August.

Inspection.—The tumor was found to be a disease of the caput coli, which was converted into a large cyst, the parietes of which were hard and thickened,—in some places almost cartilaginous. It adhered extensively to the parietes of the abdomen, and internally presented a surface of dark fungous ulceration. The ileum entering the cyst, and the ascending colon arising from it, were both perfectly healthy. On the convex surface of the liver there was a cyst lined by a firm white membrane, invested externally by the peritoneal covering of the liver, and containing about a pound of clear serous fluid. The uterus, the ovaria, and all the other viscera were entirely healthy.

SECTION III.

OF ULCERS OF THE MUCOUS MEMBRANE WITHOUT PROMINENT SYMPTOMS.

The distinction on which this section is founded is entirely of a practical nature. In its pathological

characters, the affection is the same with that which occurred in the preceding cases, and differs from it only in the extent of the disease, and in the symptoms with which it is accompanied. It consists of ulcers of various extent, but few in number; perhaps only one or two of them occurring in the whole course of the canal; or a few of them in succession occupying a small space, most commonly about the lower end of the ileum, while every other part of the canal is in a perfectly healthy state. The ulcers in these cases are generally about the size of a sixpence—sometimes larger, with deep excavations, and round elevated edges; and the remarkable circumstance connected with their history is, that they often seem to exist without producing any symptoms which indicate their existence, until the case proves suddenly fatal. The termination in such cases may take place by hæmorrhage or by peritoneal inflammation. The latter seems in general to be connected with perforation of the intestine by one of the ulcers, and the escape of its contents into the peritoneal cavity.

Ulcers of this class are chiefly met with under the following circumstances.

1. In acute diseases, as the common continued fever. In this case there may have been some diarrhœa or slight symptoms in the bowels; or there may have been no symptoms indicating any such disease, until the fatal event takes place in an unexpected manner by hæmorrhage or peritoneal inflammation.

2. Ulcers of this class seem to exist in a more chronic form, in which the symptoms may be so obscure that their presence is not suspected during the life of the patient. The fatal event, in such cases, may occur suddenly, by perforation of the intestine, or by gradual exhaustion after long continued bad health; or the affec-

tion may be discovered only when the patient has died of some other disease.

§ I.—An ulcer of this class fatal by hæmorrhage without previous symptoms in the bowels.

Case. CVI.—A gentleman, aged 35, (1st January, 1826) had been affected for a few days with symptoms indicating the mildest form of continued fever, which was at that time very prevalent in Edinburgh. He had foul tongue; bad appetite; and disturbed sleep; pulse from 96 to 100; had kept his bed only two days, and had not done so until desired by his medical attendant, Mr. Law. His bowels were easily moved, and the stools were quite natural; and for two days more this case seemed to be going on in the mildest possible form, without any local uneasiness, and without the slightest appearance of danger. On the 3d, about mid-day, he got up to go to stool, and discharged from his bowels a quantity of fluid blood, which nearly half filled the night table. He fell in a state of syncope on the floor, where a mattress was put under him, after he had recovered a little, as it was found impossible to get him into bed. After some time blood began to flow again from his bowels, in such quantities as to penetrate entirely through both the mattress and the carpet. A variety of means were employed without benefit; he rallied slightly from time to time, but always sunk back again into a state of extreme exhaustion; and died in about four hours after the first appearance of blood.

Inspection.—The bowels were found externally healthy, till we came to the lower end of the ileum, where a small portion was of a very dark colour, and appeared to be considerably thickened. In the inner surface

of this portion, there was a deep defined ulcer about the size of a shilling, with elevated edges; it was partially filled up by a dark red fungous and by portions of coagulated blood. There was a similar ulcer in the caput coli, but the former appeared to have been the source of the hæmorrhage. No other disease could be discovered in any organ.

§ II.—An ulcer of this class suddenly fatal by peritonitis.

Case CVII.—A girl, aged 14, about the 29th October, 1825, was seized with symptoms of continued fever, which went on in a mild and favourable form for a week. I saw her for the first time on the ninth day; her tongue was then clean; pulse 96; there was no complaint of any pain; the bowels were easily moved, and the motions were natural; the abdomen was soft and natural to the feel, and no pain was complained of on pressure in any part of it. The same evening she began to complain of a burning pain in the right side of the abdomen, and passed a very restless night. Being out of town, I did not see her till the afternoon of the following day, when I found the pulse 140 and small; the abdomen tense, distended and very painful upon pressure, especially in the right side, in the region of the caput coli. Her strength was sinking, and she died in two hours after the visit.

Inspection.—On the small intestine, there was a bright redness with some distention. The caput coli and ascending colon were distended, and of a dark livid colour. On cutting into the caput coli, the opening into the ileum appeared very turgid, with rounded projecting edges; and the lower extremity of the ileum,

immediately adjoining the aperture, was completely surrounded by a series of ulcers. Other ulcers of the same kind appeared in a more detached form, along the lower extremity of the ileum in several places. The mesenteric glands were diseased in a very singular manner; many of them formed semi-transparent vesicles, which, when touched with the knife, burst with a sharp explosion, throwing out air only. When they were emptied of this, the vesicles were found to contain calcareous or cheesy matter of the usual appearance.

No perforation of the intestine was observed in this case, but it had very much the appearance of the cases that terminate in this manner. An interesting collection of these has been published by M. Louis, an abstract of which I inserted in the Edinburgh Medical Journal for January, 1824. These cases had in general at first the caracters of continued fever, with pectoral symptoms in a few of them. In some, there had been pain and tenderness of the abdomen with diarrhœa; but in others, there had been no symptom referred to the belly until the fatal event took place. This occurred at various periods of the disease, generally from the 10th to the 15th day; in one, it was so early as the 4th day; in another as late as three weeks; and in several, it occurred after the patients were considered as convalescent. The fatal attack consisted of a sudden accession of most violent pain in the abdomen, with tenderness and tension, in some with vomiting; and it was fatal in periods of from twenty to fifty hours. On inspection, ulcers of various extent were found in the small intestine, generally towards the lower end of the ileum; and in all of them, there was found a perforation of the intestine by one of the ulcers, with extensive peritonitis, adhesions and turbid effusion in the peritoneal cavity. In some cases of the same kind mentioned by Cloquet, the preceding symptoms marked

more distinctly intestinal disease. There was in general obstinate diarrhœa, with pain of the abdomen; and after a certain period, varying from eight or ten days to two months, there was a sudden and violent aggravation of the pain, with tension and extreme tenderness of the abdomen, and this attack was speedily fatal. Ulceration of greater or less extent was found in the mucous membrane, with perforation of the intestine by one of the ulcers, and the usual appearances of recent peritonitis.*

§ III.—Ulcers of this class, without any previous illness, suddenly fatal by perforation.

Case CVIII.—A stout man, aged 36, who had previously enjoyed good health, was suddenly seized, while engaged at his usual employment, with violent pain in the abdomen and vomiting; the pulse was not affected. He was seen by Mr. William Wood, to whom I am indebted for the history of the case; and blood-letting and the other usual remedies were employed without benefit. The symptoms continued, the pain extending over the whole abdomen; the pulse became quick and feeble, with rapid sinking of the vital powers, and he died in 18 hours.

Inspection.—Nothing could be discovered in the cavity of the abdomen except a considerable quantity of thin feculent fluid; and it was only after a long and minute examination, that a perforation was discovered in the lower part of the duodenum, capable of transmitting a large quill; it had its origin in an ulcer of the mucous membrane, which was considerably larger than the perforation.

* Nouveau Jour. de Med., Tom. i.

Case CIX.—A gentleman, aged 60, had enjoyed excellent health, except habitual costiveness. On 6th December, 1810, he was sitting after dinner reading aloud to some friends who were with him, when he suddenly complained of most violent pain in the lower part of the abdomen, and vomited repeatedly. His countenance became pale, and his hands rather cold; and his pulse, when he was seen by Mr. William Wood, was feeble and not frequent. The most judicious practice was employed without benefit; the pain continued; the vomiting recurred at intervals; the pulse became frequent and feeble, with rapid sinking of the vital powers; and he died in about six hours.

Inspection.—There was much feculent matter in the cavity of the abdomen, which was found to have escaped through a perforation of the colon at its lower part, a little above its junction with the rectum. The opening was larger than a shilling, and was surrounded by a mass of induration; and for several inches the intestine was hard and thickened, and on its internal surface extensively ulcerated. At the lower part of the diseased portion, about two or three inches below the rupture, the intestine was contracted by a hard ring, so as scarcely to transmit a finger.

§ IV.—Ulcers of this class found connected with obscure symptoms of long standing.

There is reason to believe that ulceration of the mucous membrane, of limited extent, sometimes exists in connection with obscure and protracted symptoms, without assuming any characters that distinctly indicate the existence of such disease.

A gentleman, aged 34, who had formerly suffered from dysentery, but had been free from any symptom of it for several years, was observed to look ill and to lose flesh without any defined complaint, except nausea and indigestion; his spirits were depressed and his bowels were irregular, being sometimes loose but more frequently confined. After several months had passed in this manner, he had frequent vomiting and a distressing sensation of heat in the stomach and œsophagus. He sometimes took food with eagerness, and sometimes refused it. His pulse continued natural, until three days before his death; he then had convulsive affections and delirium, with frequent pulse, and died in a state of coma which continued about 12 hours. His death happened about a fortnight after the commencement of the vomiting. On inspection, all the viscera were found healthy, except about eighteen inches of the lower extremity of the ileum. The coats of this portion were livid, and several indurations were felt through them. Its internal surface was covered with ulcers of various sizes, from the size of a bean to that of a half-crown piece; they were circumscribed, but very rugged, from a great quantity of fungus which was thrown out both from their surfaces and edges.*

A woman, aged 55, was affected with weakness, emaciation, and loss of appetite, without any complaint except of occasional colic pains, which were slight and transient; and she had some discharge of blood by stool, which was considered as hæmorrhoidal. After she had been affected in this manner for six months, she became suddenly comatose, and died on the following day. On inspection, no disease could be detected in the brain. Nearly the whole extent of the rectum was occupied by cancerous ulceration; the remainder

* Mem. of the Med. Soc. London. vol. vi. p. 128.

of it, and the left side of the colon, were red and purple, as if sphacelated,—the other viscera were sound.*

By a minute examination in cases of this kind, the seat of the disease may sometimes be detected by tenderness upon pressure, limited to a circumscribed space. It is also a good rule in all obscure affections of the bowels to make a careful examination of the rectum. I have in several cases discovered cancerous ulceration there, in connection with derangements of the bowels of a slight and obscure character.

SECTION IV.

OF THE TREATMENT OF THE AFFECTIONS OF THE MUCOUS MEMBRANE.

§ I.—Treatment of the acute cases.

If to the class of diseases now described, we simply apply the term inflammation of the mucous membrane of the intestine, we can be at little loss in fixing upon the first and great principle to be followed in the treatment; while, if we use the term dysentery, we in vain endeavour to find our way amid the various courses that have been proposed for the treatment of the disease. But upon a fair and candid review of all the facts which are now before us on this important subject, I think we are fully warranted in assuming the principle, that dysentery is primarily an inflammation of the mucous membrane of the intestine; and that the first principle in

* Pinel Med. Cinique, p. 257.

the treatment is precisely the same as that which applies to other inflammations.

There is, however, a circumstance to be kept in mind, which perhaps may be considered as the source of some of the diversity of opinion in regard to the nature and treatment of dysentery; namely, that inflammations of all mucous membranes exist in a state in which they admit of a spontaneous cure,—certain changes taking place in the discharge from the morbid surface, in the course of which the parts gradually recover their healthy condition. Of remedies which are given while this process is going forward, some may assist it, some may be totally inert, and some may perhaps even have a tendency to retard it, and the process may notwithstanding go on to a resolution of the disease. The most obvious illustration of these facts is from the inflammatory affections of the bronchial membrane. In a certain form, even of considerable extent, they get well under the use of trivial remedies, or without any treatment at all; and at a certain period of this progress, active treatment is not only useless, but hurtful. But these facts do not affect our opinion in regard to the pathology of the disease; for we know it to exist in another degree, in which, if not actively treated in its early stage, it is speedily fatal. On the same principle, we cannot doubt that dysentery, in all its forms and all its degrees, is an inflammatory affection of the intestinal membrane; that it exists in a degree in which it admits of a spontaneous cure, and that this may perhaps be assisted by various remedies of no very active kind; but that it exists in another degree, in which, if not treated with the utmost activity, it may be speedily fatal, or may terminate by incurable ulceration.

The general principles of treatment appear to be the following:—

1. To subdue the inflammation.

2. To quiet the general irritation of the canal.

3. To correct the morbid secretions from the diseased surface.

I. For answering the first of these indications, the remedies on which we rely, when the case is seen at a period adapted to the use of them, are general and topical blood-letting, blistering, diaphoretics, and antiphlogistic regimen. On this subject, on which my own experience has been limited, I may now refer to the best practical writers on dysentery, as it is seen in various parts of the world, particularly Dr. Ballingall, Dr. Bampfield, and many others; and the practice has also received the high sanction of Sir James M'Grigor, under whose instructions it has become the established treatment of dysentery by the medical department of the army. Dysentery, indeed, may exist in a degree in which it may get well without bleeding, but so also may peripneumonia or bronchitis; and it may occur in unhealthy debilitated subjects, or in combination with low malignant fever, and may thus not admit of active treatment; but these circumstances only introduce new difficulties in regard to individual cases, and do not affect the general principles which regulate the treatment of the disease.

The use of general bleeding must of course be regulated by the activity of the symptoms, the constitution of the patient, and the period of the disease; for it is probable, that in general the period for active treatment is soon over. Much benefit is often derived from free local bleeding, which may be accomplished by leeches, applied either to the abdomen, or, when the disease is seated in the lower part of the bowels, to the verge of the anus. As diaphoretics, the best is perhaps Dover's powder; Ipecacuan in powder, in doses of gr. i. or ii. three or four times a day, has also been much recommended, and James' powder, given in the same manner; but

in all inflammatory affections of the mucous membrane of the intestine, the effect of antimonial preparations would appear to be rather questionable.

II. The second indication, which is to quiet the general irritation of the canal, will be chiefly answered by mucilaginous articles and opiates, particularly Dover's powder, perhaps combined with chalk, with the mildest kinds of farinaceous food in very small quantity; and I imagine that much will be gained in the early period of the disease, especially when the affection is extensive, by taking into the stomach as little as possible of either food or drink; as from the morbid irritability of the parts, the mildest articles often produce great irritation. Suet, dissolved in milk, has been much recommended; and a favourite remedy in the time of Sir John Pringle was a combination of yellow wax and Spanish soap, melted together over a gentle fire, and then rubbed up with water. The warm bath is often beneficial, and equal gentle pressure of the abdomen, by a roller of elastic flannel, is a remedy which has been strongly recommended as of much efficacy in all stages and forms of dysentery.*

III. For correcting the morbid condition of the membrane, after the force of the inflammatory symptoms has been subdued by the necessary means, various remedies appear to be useful, in different states and different stages of the disease. In the earlier stages, benefit is frequently obtained from doses of Dover's powder, of from 5 to 10 grains, combined with 1 grain of calomel, repeated, at first, every four or five hours, and afterwards at longer intervals. This applies to the dysentery of this country; in the more severe cases, which occur in warmer climates, Dr. Ferguson has

* See Dewar on Dysentery.

strongly recommended a grain and a half of calomel, with one grain of ipecacuan, to be repeated every hour until the mouth is affected, when, he says, the dysenteric symptoms always cease. In the dysentery of tropical climates, calomel is given in still larger doses, as from 10 to 15, or even 20 grains, repeated three or four times a-day, generally combined with opium. Of this mode of treatment, as applied to the dysentery of tropical climates, I would not presume to give an opinion, because I have had no experience; but when I have seen a similar practice attempted in the dysenteric affections of this country, it has appeared to be decidedly injurious; and when mercury is given, it appears that the small doses of calomel combined with Dover's powder, in the manner which I have mentioned, is the form best adapted to the earlier stages of the disease. In a more advanced stage, when the morbid secretion continues after the inflammatory symptoms have been subdued, various remedies of a tonic and astringent nature appear to be useful,—such as, cusparia, lime water, oxide of bismuth, nitric acid, sulphate of alum, logwood, balsam of copaiva, acetate of lead, and various combinations of these with each other, and with small opiates, especially a strong decoction of cusparia with nitric acid and laudanum; and oxide of bismuth with cusparia and Dover's powder. Charcoal has been strongly recommended, and, in one very severe case, in which it was given in combination with Dover's powder, it appeared to Mr. Gillespie and myself to be decidedly useful. Nitric acid, combined with opiates, I conceive to be a remedy deserving of much attention even in the earlier stages, after the necessary evacuations.

When the disease is chiefly seated in the lower part of the colon and rectum, various substances may be given in the form of injections. Of these, the most useful seem to be, in the early stages, mucilaginous

articles, or thin arrow-root, with an opiate, an infusion of tobacco, or an infusion of Ipecacuan. After the first urgency of the inflammatory state has been subdued, I have seen decided benefit in relieving the tenesmus by injections of lime water, at first diluted with equal parts of milk or thin arrow-root, and with the addition of an opiate.

In the above observations, I have said nothing of the use of purgatives in this class of diseases, because I do not consider them as forming a regular or essential part of the treatment; but it comes to be a question of much interest, what is the principle to be kept in view in regard to the use of purgatives, and what are the cases to which they are adapted.

It is clear that a modification of the disease exists, in which it is confined to the lower part of the bowels, and is accompanied by retention of feces in the parts above. This state of the upper part of the bowels is to be considered, in such cases, as requiring distinct attention, because, in a febrile and irritable state of the system, it must prove an additional source of irritation, or may even pass into a state bordering upon ileus. It must, therefore, be counteracted by the occasional use of the mildest laxatives, as castor oil or small doses of the neutral salts. But by laxatives in such a case, I imagine we are to consider ourselves as only obviating bad effects from feculent accumulation in the parts above, rather than as acting upon the disease with which we are contending. By laxatives, indeed, the evacuations may become healthy, but these are brought down from the healthy parts above, and cannot be considered as having any beneficial operation upon the part which is the primary seat of the disease. The spontaneous improvement of the evacuations, in connection with the resolution of the disease, is to be considered, I imagine, as an effect and a sign, rather than a cause of that resolution, and as a state which cannot be

imitated or forced by the use of purgatives. In the earlier stages of this modification of the disease, indeed, it is highly necessary and proper to ascertain, by the operation of some mild medicine, that there is no accumulation of feculent matter; but we have seen in the most satisfactory manner, that the bowels may be entirely without feculent matter, though the evacuations have consisted entirely of bloody mucus from an early period of the disease. In such cases as these, the use of purgatives must be unnecessary; and, when the inflammation is extensive, producing a morbid irritability of a great part of the canal, we can scarcely doubt that they must be injurious. Though the evacuations, in such cases, may be of an unnatural appearance, it is to be remembered that this is the result of morbid secretion, not to be corrected by purgatives, but to be removed only by curing the disease on which they depend.

In regard to the dysentery of this country, the most extensive field of observation has been in Ireland, and we have the advantage of a full and able account of it by Dr. Cheyne.* According to the extensive experience of this eminent physician, the remedy "least equivocal in its effects, and the most uniformly useful," was blood-letting. The mercurial treatment was tried in all its forms, but often failed; and it did not appear worthy of the same degree of confidence as in other climates. In some cases, the mouth could not be affected; in others, the worst description of mercurial mouth was produced. But even when salivation took place at an early period, it was in many instances unequal to the cure; and in cases in which the disease was supposed to have passed into the ulcerative stage, mercury was injurious. Of the cases which were not accompanied by much pain or fever, many got well with a

* Dublin Hospital Reports, vol. III.

saline purgative, followed by two or three doses of Dover's powder; and even of the more severe cases, attended with fever and tenderness of the abdomen, many recovered under the same remedies preceded by bloodletting. But in many cases, purgatives seemed greatly to aggravate all the sufferings of the patient. They often failed in producing any change in the appearance of the stools; while, on the other hand, a large feculent loose stool was not unfrequently passed after a bleeding, by patients who, for several days before, had passed nothing but mucus mixed with blood. The practical result of Dr. Cheyne's observation seems to be, that the mode of treatment most generally useful was, —bloodletting, followed by calomel and opium, and this by the balsam of copaiva, with farinaceous diet; but next to full bleeding, his chief reliance seems to be in opium; and on a review of his whole experience in the epidemic to which his valuable paper refers, he says, "were the same cases again to be placed under my care, I would not hesitate to give opium in doses of four or five grains, as it was the opium chiefly that seemed to arrest the progress of the inflammation; and whatever, in such a case, procured respite to the patient from agony, sometimes proved of permanent benefit."

The preceding observations were written, and ready to go to press, before I had an opportunity of seeing the second volume of Mr. Annesley's splendid work on the Diseases of India. It gives me much satisfaction to find that they agree, in all the more essential respects, with his observations in regard to dysentery. The point on which I am chiefly disposed to differ from this eminent writer, or I ought rather to say, in which I am disposed to think that his treatment is not entirely adapted to the dysentery of this country, is in the frequent or almost daily use of purgatives. I have already stated my opinion on this subject, and the grounds which

induce me to believe that the use of purgatives in dysentery is a practice requiring the utmost discretion, being in some cases proper, in others unnecessary, and in not a few decidedly injurious. I have also stated the experience of Dr. Cheyne, that purgatives in many cases produced no beneficial result, and in others greatly aggravated all the sufferings of the patient. The subject is one of the highest practical importance, and deserving to be investigated with the utmost attention.

Mr. Annesley begins the treatment of dysentery in a robust patient with free general and topical bleeding, and a large dose of calomel combined with opium or Dover's powder,—in debilitated habits, topical bleeding is employed. These are followed at the distance of a few hours by a purgative of castor oil, or jalap and cream of tartar, and a purgative injection. The calomel and opium are also repeated after a few hours interval; and this treatment is assisted by warm fomentations, warm bath, and anodyne injections in very small bulk. These remedies are afterwards repeated according to circumstances, with blistering on the abdomen if necessary; and a purgative is generally given every morning. In the more advanced stages of the disease, when there is reason to believe that ulceration has taken place, he trusts chiefly to blistering, anodyne injections, Dover's powder with camphor and catechu, nitric acid, and the external application to the abdomen of the nitro-muriatic solution.

Mr. Annesley gives no countenance to the empirical and indiscriminate use of mercury, which has become so much in fashion with some writers in all stages and all conditions of dysentery. He gives calomel with opium in the early stages, along with the necessary evacuations, but chiefly as a purgative. "When given late in the disease with the intention of affecting the system, or when its exhibition is continued with this intention for too long a period, it often seems to precipitate the malady to an un-

favourable termination, by inducing or keeping up irritative fever, and lowering the powers of life." In regard to the difficulty often experienced in affecting the system with mercury in the early stages, he states, that it is occasioned by the existence of active inflammation, and that the appearance of mercurial action in these cases is often to be regarded as a sign rather than a cause of the resolution of the disease. In many instances, both of simple dysentery, and of dysentery combined with disease of the liver, he has seen the mercurial action take place in the fullest manner, and yet the disease was not only not arrested, but seemed to run its course more rapidly to an unfavourable termination. And even in the milder cases which got well under the constitutional effects of mercury, there was often a protracted recovery from the diminished energy of the powers of life, occasioned more by the mercurial action than by the disease.

§ II.—Treatment of the chronic cases.

In the chronic form of the disease, the morbid conditions which we have chiefly to contend with, are either the chronic fungoid inflammation, or ulceration. The treatment is extremely precarious, and but few of the cases comparatively do well. The remedies which appear to be most generally useful are the following: lime water; vegetable bitters and astringents, especially the cusparia and logwood; preparations of iron; small quantities of mercury with opium, especially calomel with Dover's powder, or small doses of calomel with opium and ipecacuan; the resins, as turpentine, balsam of copaiva or tolu, with small opiates; sulphur with opium; nitric acid; various combinations of these

remedies with each other, as a strong decoction of cusparia with nitric acid and laudanum. Repeated blistering on the abdomen is often very beneficial, also bandaging with a broad flannel roller, and tepid salt water bath. Sulphate of copper has lately been recommended by Dr. Grenville in various protracted affections of the bowels; and in any trials of it which I have had an opportunity of making in this class of diseases, it appears to be a remedy deserving of much attention. It is given in doses, at first, of half a grain, combined with an equal quantity of opium, and is gradually increased, if necessary, sometimes to the extent of gr. iii. with half a grain or a grain of opium, three times a day.

In the treatment of all the affections of this class, much depends upon the most rigid attention to diet. Animal food in every form seems in general to be hurtful; and the greatest benefit results from a diet strictly confined to farinaceous articles and milk.

A modification of the disease appears to exist, affecting the whole course of the mucous membranes, and going on for a length of time with characters of an alarming kind, while it is still under the control of medical treatment. The following case will illustrate this modification of the disease, which in practice, is one of considerable interest.

Case CX.—A lady, aged 30, came under my care in spring, 1813, affected in the following manner. She had a remarkable tenderness of the inside of the lips, the tongue, and the throat; a constant discharge of saliva; a burning uneasiness in the tongue, throat, breast, and stomach; and great uneasiness in swallowing, and for sometime after it. She had a constant tendency to diarrhœa, and a feeling as if food or drink did not remain in the stomach, but passed almost immediately through the bowels. There was some cough,

with frequent pulse, great debility, and increasing emaciation. The throat appeared raw, and a little inflamed; the edges of the tongue and the inside of the under lip were excoriated, and covered with small ulcers, having inflamed margins; there was also a painful excoriation about the anus and the labia. The complaint was of about three months standing, and had begun while she was in the puerperal state in England. A variety of treatment was employed without benefit; she became emaciated and debilitated to the greatest degree; the diarrhœa became incessant, with much pain, and a feeling as if every thing she swallowed passed through her immediately. She had no relief but from large opiates, and that relief was but slight and temporary. When the case appeared to be hopeless, she began to take a decoction of logwood (1 ℥. to 1 lb.) a wine glassful four times a-day, combined with a small opiate. From this time she recovered daily, and in two or three weeks was in perfect health.

Affections of the mucous membrane of the bowels seem to occur in a slighter form than in any of the cases referred to in the preceding observations, and to prove the source of protracted bad health, with obscure and undefined symptoms, such as a superficial observer is apt to consider as hypochondriacal. There is variable appetite, with impaired digestion, and a variety of uneasy feelings about the bowels, sometimes described as a rawness and tenderness, and sometimes as a feeling of heat, as if hot water were passing through them. A painful feeling of distention is often complained of, especially after meals, though no actual appearance of distention can be perceived. In some cases, the tongue is loaded; in others, there is a peculiar raw appearance of the tongue and throat; and sometimes the tongue has a peculiar red, dry, and glazed appearance. Along with these feelings, there is occasionally a slight and

protracted feverishness, but, in some cases, the pulse is not at all affected. The bowels are often tolerably natural, or easily regulated; but laxative medicine is in general uncertain in its effects, and is apt to operate too violently. The motions are sometimes natural, but frequently they are mixed with mucus in a very concrete or tenacious state, assuming various forms, as irregular crusts, like the crusts of aphthæ, or masses of a rounded or tubular form, which are apt to be mistaken for worms. The affection is often extremely tedious and untractable; and it is often difficult to say what treatment is most beneficial. The remedies deserving of attention are chiefly those already referred to, in regard to the diseases of the membrane, especially bismuth, lime water, cusparia, balsam of copaiva. Mercury in any form appears in general to be hurtful. Much depends upon diet; and the greatest benefit is often obtained from a regimen restricted entirely to farinaceous articles and milk. Stimulating friction of the abdomen is often useful; also warm clothing and the tepid salt water bath.

SECTION V.

OF THE INFLAMMATION OF THE MUCOUS MEMBRANE IN INFANTS.

Acute inflammation of the mucous membrane of the intestine is a frequent disease of infants, about the age of 6 or 8 months; and though the general

principles, which are applicable to it, do not differ from those already referred to in regard to adults, it is an affection of so much practical importance, as to be deserving of separate description. The most important point in the investigation refers to the means of distinguishing the disease, in its early stages, from the ordinary bowel complaints of children about the period of dentition ; and this is often a matter of considerable difficulty. The principal circumstance to be kept in view in the diagnosis is, that it is a febrile disease. The infant is usually hot and restless in the early stages, with thirst ; and the tongue is dry, or covered with a brownish crust ; there is in general a good deal of screaming and fretfulness, disturbed sleep, frequently vomiting ; and, in many instances, pressure on the abdomen appears to give uneasiness. The bowels are loose, but this is not in every case a prominent symptom ; for, even in the advanced stages, the bowels may not be moved above three or four times in 24 hours, while the disease is advancing rapidly to a fatal termination. In other cases, however, this symptom is more urgent,—the evacuations being very frequent, and preceded by much restlessness and appearance of pain ; and the matters evacuated are sometimes discharged with a remarkable degree of force, so as to be propelled to a considerable distance. The evacuations vary exceedingly in appearance, and I have never been able to satisfy myself that any reliance is to be placed upon them in ascertaining the disease. They sometimes consist chiefly of a reddish brown mucus, sometimes of a pale clay-coloured matter, and sometimes of a dark watery fluid ; but in many cases they shew little deviation from the healthy state, while, in others, their appearance is evidently disguised or modified by articles of nourishment, which pass through nearly unchanged. The disease often goes on for some time without exciting alarm, or being distinguished from an ordina-

ry diarrhœa, until attention is strongly and suddenly directed to the dangerous nature of it, by the occurrence of constitutional symptoms. These consist in some cases, of a great degree of febrile oppression, with dry crusted tongue, thirst and vomiting; in others, of a very sudden and rapid exhaustion of the vital powers, which is unexpected, and is not accounted for by the frequency of the evacuations; and sometimes the first appearance of unfavourable symptoms consists in the sudden occurrence of coma, with a peculiar hollow languid look of the eye, and a pale waxen aspect of the whole body, while the pulse perhaps continues of tolerable strength. These symptoms may appear while the disease has been going on but for a short time, and while the evacuations have been by no means frequent; while the affection, in short, had not been distinguished from the ordinary bowel complaints of infants, which often go on for a long time without producing any inconvenience.

The causes of this affection are not well ascertained. It frequently occurs about the period of dentition, and in many cases appears to be connected with weaning. The fatal terminations are either by a rapid and peculiar sinking of the vital powers or by coma. The appearances on dissection are nearly uniform. In various parts of the inner surface of the intestine, especially the ileum, we find irregular patches of inflammation, sensibly elevated above the level of the surrounding parts, and generally covered, either by minute vesicles or by minute ulcers. The disease seems in general to be fatal in this early stage, and I have not seen it, as in adults, either pass into more decided ulceration, or terminate by peritonitis. In the cases which terminate by coma, effusion in the brain is met with, and this termination is often preceded by a remarkable diminution of the secretion of urine, amounting, in many cases, nearly to suppression. This termination seems

to bear a considerable analogy to the Ischuria Renalis, which usually terminates by coma, after the suppression has continued for two or three days.

In regard to the treatment of this highly dangerous affection, it is difficult to determine which is the best; because in cases which terminate favourably, we cannot say with certainty that they really were examples of the disease. In some cases in which there is no vomiting, a gentle emetic seems to be useful in the early stages; afterwards, Dover's powder combined with chalk, opiate glysters, opiate or stimulating frictions to the abdomen, tepid bath, and small doses of calomel combined with Dover's powder. In some cases the free use of digitalis seems to be extremely useful, also blistering on the abdomen; and, when the disease exhibits much activity, topical bleeding may be employed in the early stages. In the advanced stages, when there is a tendency to sinking, wine must be given freely; when there are threatenings of coma, blistering on the neck must be employed. From both these conditions infants often make most unexpected recoveries. When there is urgent vomiting, blistering on the epigastrium appears to be the most effectual remedy; considerable benefit in settling the stomach is often obtained from small doses of the vegetable bitters and the oxide of bismuth. The state of the teeth is to be attended to, and the gums are to be divided wherever they appear to be producing irritation. In the protracted bowel complaints of infants in which there was reason to suspect the existence of this affection in a chronic form, I have found nothing so useful as lime-water.

The two following cases will be sufficient to illustrate the principal phenomena connected with this interesting and highly dangerous affection.

Case CXI.—An infant, aged 6 months, (13th May, 1817) had been affected for about a week with looseness of the bowels and occasional vomiting. The affection had been considered as the common bowel complaint of dentition, but the stools were scanty, offensive, and dark coloured; and though they were by no means frequent, there was observed a considerable tendency to sinking, with paleness and coldness of the body. After several days, the stools became natural, the vomiting ceased, the appetite returned, and the looseness was extremely moderate, but these favourable appearances were of short continuance. On the evening of the 18th the diarrhœa suddenly increased; it was excited by every thing that was taken into the stomach, and the articles that were taken seemed to pass through the bowels with great rapidity. On the morning of the 19th, she was pale and exhausted; and though the looseness was checked by opiate injections, every attempt to support her was in vain. She died in the afternoon, having lain through the day in a state resembling coma.

Inspection.—The bowels were externally healthy, except some spots of superficial redness. On the inner surface of the small intestines there were, in many places, irregular patches of inflammation; in other places there were circumscribed spots of a dull ash colour, which were sensibly elevated above the level of the surrounding parts, and were covered by minute ulcers, so as to give them a peculiar honeycomb appearance. On the external surface of the intestine, corresponding with many of these portions, there were defined spots of redness and increased vascularity; the mesenteric glands were enlarged; the other viscera were healthy.

Case CXII.—An infant, aged 7 months, soon after weaning was suddenly seized with vomiting and diar-

rhœa ; was oppressed, fretful, and feverish ; the motions were scanty, and varied in their appearance, being sometimes brownish, and sometimes pretty natural. After a day or two the vomiting ceased ; the diarrhœa continued, not severe nor frequent, but accompanied by much oppression and feverishness, a brown fur on the tongue, and a remarkable dryness of the gums ; the motions varying in appearance as before. Various remedies were now employed, with little benefit. After four or five days, the child became comatose ; this was relieved by blistering on the neck, and a dose of calomel. The motions then became green, but were generally scanty and watery ; the febrile state continued, with the fur on the tongue ; the child sunk gradually, with oppressed breathing, and died on the ninth day.

Inspection.—The bowels were externally healthy, except spots of redness on various parts of the small intestine, which appeared deep seated, as if shining through the peritoneal coat. At the parts corresponding with these spots, the mucous membrane was elevated into irregular patches of inflammation, and the inflamed surfaces were covered by very minute ulcers ; in the neighbourhood of these portions the mesentery was unusually vascular. The colon was collapsed and externally healthy ; its inner surface was covered in many places by very small vesicles, which were scarcely elevated above the surface of the membrane, but appeared as if shining through it, clear, transparent, and watery ; they were most numerous in the caput coli, but were also observed through the whole course of the colon : and they preserved the same character through the whole extent of it, without any appearance either of inflammation or ulceration.

SECTION VI.

CASES SHEWING THE STATE OF THE MUCOUS MEMBRANE AFTER THE CESSATION OF THE SYMPTOMS, THE PATIENTS DYING OF OTHER DISEASES.

To the facts which have been related in connection with this interesting inquiry, I shall only add the following examples, calculated to shew the state of the parts, when the symptoms had ceased, after long continuance, and the patients died of other diseases. The second shewed a very remarkable and rather uncommon variety of the matter evacuated from the bowels.

Case CXIII.—A lady, aged 24, had been of a feeble and delicate habit from her early years, but from the age of sixteen, had been almost constantly in a more decided state of bad health. She was generally confined during the whole winter, with cough, pain of the bowels, and diarrhœa; she got a little better during the summer, but was constantly more or less affected with diarrhœa, and occasional pain of the bowels, with variable appetite, bad digestion, and general debility. She had passed six or seven years in this manner, when she came to Scotland in the summer of 1815. She was then much emaciated, with a constant loose state of the bowels; the evacuations were fluid, and of a whitish colour, and usually occurred four or five times every day; when at any time they were less frequent, she became much oppressed about the stomach, and extremely uneasy. She had frequently pain in the bowels; her appetite was bad, but the pulse was natural. In the

winter, the same state of her bowels continued, and she had loud noisy cough without expectoration. In summer 1816, she began to improve considerably, having appeared to derive much benefit from large doses of the muriated tincture of iron, combined with tincture of hyosciamus. The bowels got into a natural state, the stools being consistent and healthy, and from this time there was no return of diarrhœa : but her appetite and digestion continued very bad, and she made little improvement either in flesh or strength. In the following winter her cough returned, at first without expectoration ; but afterwards she had pain in the breast, purulent expectoration, and hectic fever ; and died of phthisis in May, 1817, without any return of the complaint in the bowels.

Inspection.—The lungs were extensively tubercular, with numerous vomicæ. The lower half of the stomach was contracted and considerably thickened, and the pylorous was a little thickened, but not indurated. On the internal surface of the intestine there were many portions, several inches in extent, of a dark red colour, and more vascular than the other parts ; and on many places there were, on the mucous membrane, small circumscribed smooth spots, which had every appearance of the cicatrices of ulcers which had healed. The other viscera were healthy.

Case CXIV.—A lady, aged 18, had suffered for a year or more from a disordered state of the bowels, accompanied by a most remarkable and unmanageable degree of tympanitic distention. When I saw her, along with Dr. Combe, in the summer of 1826, she was affected with a variety of hysterical symptoms, with much weakness, impaired appetite, and a very disordered state of the bowels. Under a course of mild laxatives, combined with tonics, these symptoms gradually subsided ; and when she returned to the country in August, she

was in very good health, except that the bowels required the frequent use of medicine and that she occasionally complained of headach, and of a feeling of heat in the epigastric region.

In November the bowels again became more obstinate, and she was considerably annoyed with acidity. In the beginning of December, her throat was covered with aphthæ, and she brought up from it considerable quantities of thick white matter; and about the same time, the evacuations from the bowels began to contain much viscid mucus, and afterwards portions of a white substance. She now had thirst, was feverish in the evenings, and complained of pain in the right side of the abdomen in the seat of the ascending colon. The pulse through the day was generally from 74 to 80. The aphthous state of the throat disappeared in the course of December, and afterwards the tongue was only occasionally observed to be red and tender; but the other symptoms continued to recur from this time, with numerous variations, for six or seven months, during the greater part of which period she was entirely confined to bed, and was reduced to a state of the greatest weakness. The prominent symptom now was frequent discharge from the bowels of immense quantities of a substance, which sometimes appeared in the form of pure transparent jelly; at other times of a long fibrous stringy matter, and frequently of large pieces of firm, uniform, tenacious membrane. These last were occasionally discharged in flat portions several inches in extent, and frequently formed distinct tubes; sometimes they were in masses resembling hydatids, and sometimes in membranous bags which enclosed healthy feces. The membranous crusts or tubes now mentioned were frequently four or five inches in extent, and sometimes portions of white matter resembling cream were observed in the evacuations.

The discharges of these various matters frequently ceased for several days together, the motions then becoming quite natural. The re-appearance of the morbid discharges was generally preceded by a feeling of constipation, and a sense of heat along the intestinal canal, with a sensation of craving at the stomach, thirst and headach. The pulse generally continued from 70 to 80. The feculent matter, which came off mixed with the morbid discharges, was of a natural appearance, but hard and lumpy. Her appetite was generally variable, and her digestion bad. Towards the end of April, 1827, the symptoms began to subside, so that she was able to be out of bed daily for some hours. During May and June, the mucous and membranous discharges continued to recur occasionally, but in smaller quantities, and with longer intervals; and in July they entirely ceased. The bowels from this time continued natural, or were easily regulated by very mild medicines, and the evacuations were quite healthy. But from the middle of June, when the more decided improvement took place in the state of her bowels, she began to have slight cough, and in July she was again confined to bed. In the beginning of August she was brought to town, when the prominent symptom was a distinct paroxysm of fever which attacked her daily, beginning sometime betwixt twelve and two o'clock, and continuing till the evening. There was not much emaciation, but a pale unhealthy aspect; there was slight cough without expectoration, and occasional uneasiness in the left side of the thorax, where the respiration was very imperfect. The febrile paroxysms continued to increase in severity, with rapid failure of strength. In the beginning of September she began suddenly to expectorate large quantities of matter, which had a decidedly tubercular character; and she died on the 9th.

Inspection.—The left cavity of the pleura contained air and much sero-purulent fluid, in which was a large floating mass of flocculent matter. The left lung was a mass of disease, presenting various morbid conditions, from hepatization to total disorganization, with much infiltration of puriform matter, and numerous small tubercles. In the middle lobe, a small aperture made a communication betwixt the cavity of the pleura and an irregular ulcerated cavity in the substance of the lung, about four inches in diameter; and there were several other small cavities which communicated with it. The right lung was healthy, except a small cavity at the upper part; the bronchial glands at the root of the lungs were much enlarged and tubercular. The viscera of the abdomen presented no appearance of disease, except the mucous membrane of the colon. Through its whole extent, it was thickly covered with small spots of a clear white colour, which were remarkably distinguished by their colour from the mucous membrane surrounding them. Few of them were larger than the diameter of large pin heads, and, on minute examination, they were distinctly ascertained to be vesicles, very little elevated, but, when punctured, discharging a small quantity of clear fluid. The whole surface of the membrane presented a very peculiar appearance, from the immense number of these spots with which it was covered, but the other coats were entirely healthy. In the mucous membrane of the caput coli, there were two distinct spots in a state of ulceration. The small intestine was healthy.

In the preceding observations I have endeavoured to give an outline of the pathology of the mucous membrane of the intestinal canal, in as far as, in the present state of our knowledge, the facts appear to be worthy

of confidence; but it is well known, that, among the pathologists of France and other parts of the continent of Europe, the subject has been made to assume a much more extensive form. In the investigations of the writers whom I now refer to, inflammation of the gastro-intestinal membrane, in an acute, sub-acute, or chronic form, is considered as being the origin of a great variety of diseases, particularly of almost every modification of dyspeptic affections, and all the varieties of fever. This system has not been received to any extent by the pathologists of this country; and the grounds on which we differ from the eminent persons by whom it is supported are chiefly three, namely, in regard to the facts, —their generalization,—and their causation.

I. We do not recognise the facts upon which this system is founded; because, according to it, many appearances are considered as indicating inflammation of the gastro-intestinal membrane, which we believe to take place after death or immediately before it, and consequently are not to be considered as indicating disease. The nature of these appearances has already been mentioned, as well as the grounds on which we conclude that they are not worthy of confidence in this pathological inquiry. They consist of livid, red, or brown spots on the membrane, portions shewing a violet or rose colour, enlarged vessels, varicose veins, slight extravasations of blood under the membrane, and various other appearances, consisting of mere change of colour without any change in the organization of the part. Such appearances we now consider as fully ascertained to occur in a great extent in the bodies of persons who have died from execution or drowning, or from diseases not at all connected with the bowels; and, consequently, that they cannot be considered as indicating a morbid condition of the mucous membrane.

II. While we set aside, as foreign to the inquiry, a large proportion of the appearances described by these

writers, we admit that others are indicative of real and important disease; but we do not admit that these are uniform appearances in the diseases to which they refer. In a pathological point of view, for example, it is an important fact, that, in a considerable proportion of the fatal cases of fever, inflammation or ulceration is found in the gastro-intestinal membrane; but we are far from admitting that it is met with in all these cases, which we should consider as essential to the doctrine of inflammation of the gastro-intestinal membrane being considered as the cause of fever.

III. But, even on the supposition that these appearances were met with in all the fatal cases of fever, the question still remains, whether they are the cause of fever or the effects of it; and upon this head, a very slight view of the facts will shew that they are decidedly in favour of the supposition of these appearances being the effects rather than the cause of fever. This conclusion we must consider as resulting, in the first place, from the fact already mentioned, that these appearances are often wanting; and secondly, because that, in their degree, or the stage of their progress, they bear no relation to the period of the fever, but are often found existing, in their slightest or earliest stage, in cases which have proved fatal at a very advanced period, and with symptoms of the utmost malignity; while, on the other hand, they exist in a very high degree, and are apparently the immediate cause of death, in cases which have proved fatal at an early period, and in which the proper symptoms of the fever had been slight and moderate.

On all these grounds, therefore, we think we are warranted in concluding, that the affections of the gastro-intestinal membrane which are met with in connection with continued fever, are to be considered either as incidental concomitants, or as effects of the fever,—and cannot be regarded as its cause.

These observations apply to the general appearances of the mucous membrane, to which so much importance has been attached by the pathologists of the continent; but some of the later writers have taken rather a new view of the subject. Under the name of Dothinenterite, they describe an affection which they conceive to depend upon active inflammation of the mucous glands of Peyer, and the follicles of Brunner. Their observations on this subject are worthy of attention as far as they consist of facts; but we suspend our confidence when we are farther informed, that the dothinenterite is synonymous with the malignant fever of Sydenham, the hospital fever of Pringle, the typhus of Cullen, the putrid and petechial fever of other writers; in short, that every variety of fever, continued, intermittent, and remittent, arises from the inflammation of these follicles.

As the symptons of the dothinenterite, they of course describe all the phenomena of continued and malignant fever, accompanied by a loose state of the bowels and some degree of tenderness of the abdomen. The morbid conditions which they describe in these cases are, that, in the early stages, the crypts or follicles appear rather more prominent than natural, and slightly injected, especially in the upper part of the canal; that, as the disease advances, they become more prominent, with softening of the mucous membrane which covers and surrounds them; and that, at a period still more advanced, this passes into ulceration.

These observations are worthy of attention as facts; but when, in describing the symptoms of the dothinenterite, all the usual symptoms of fever are detailed, with the addition of diarrhœa, and tenderness of the abdomen, the statement merely amounts to the fact, with which we are well acquainted, that, when in a fatal case of fever, there has been tenderness of

the abdomen with diarrhœa, we may expect to find disease of the mucous membrane or its follicles. When we are farther told, that this takes place in every case of fever, and consequently that fever in all its modifications depends upon the inflammation of these follicles, we hesitate alike about the doctrine and the generalization on which it is founded. This we do upon two grounds, namely, that, in many fatal cases of fever, we cannot detect any disease of these follicles; and secondly, that, when we do find such disease, the degree of it, or the stage of its progress, bears no relation to the period of the fever, or the intensity of its symptoms. This will appear from a slight examination of the cases related even by the writers referred to. Thus, in a case by Landini, which was drawn out to the 21st day, with every symptom of the most severe form of typhus, the only morbid appearances found in the mucous membrane were,—in some places a grey colour; the crypts of Brunner little developed; those of Peyer slightly enlarged, and a few of them presenting traces of erosion. In another patient, who lay with every bad symptom for twenty-eight days, the glands of Peyer offered some points which were red and denuded of their mucous membrane; those of Brunner were almost all in their natural state, except a few which shewed ulcerations, and a very small number which offered traces of melanism; the mucous membrane of the great intestine was of a pale rose colour, and appear thickened. We must suspend our confidence, when we find a system, which professes to account for the whole phenomena of fever, founded upon such inadequate appearances as these. The fair conclusions from a view of the whole subject appear to be, that, in certain cases of continued fever, the gastro-intestinal membrane or its follicles become inflamed, pustular, or ulcerated; and that, as facts in the history of fever, these

are worthy of much attention, but certainly do not warrant, in the slightest degree, any general deduction in regard to its nature or cause.*

* See Landini sur la Dothinenterite—Revue Medicale, 1826.

APPENDIX

TO THE

PATHOLOGY OF THE INTESTINAL CANAL.

In this appendix, I mean to introduce a few observations on some points of practical importance, connected with the pathology of the abdomen, but not requiring a detailed consideration.

SECTION I.

DISEASE OF THE MESENTERIC GLANDS.

The disease of the mesenteric glands is so familiar to every practical man, that it may appear superfluous to add any observations on it. There are, however, some points relating to the affection, which present an interest-

ing subject of investigation. It appears that the origin of the disease may in some cases be traced to ulceration of the mucous membrane of the intestine, the chain of diseased glands being first traced in the part of the mesentery most contiguous to the seat of the ulcers. To what extent this connection exists has not been investigated, but it is worthy of attention. In the progress of the affection there are some facts of considerable interest. In the earliest period at which we have an opportunity of examining the diseased glands, they present, when cut into, a pale flesh colour, and a soft fleshy texture; and we sometimes find them of very considerable size, though presenting merely this texture. As the disease advances, they seem to become firmer, and to loose the flesh colour, assuming first a kind of semi-transparency, and afterwards a firm opake white structure, resembling the white tubercle of the lungs. In a mass of considerable size, we often observe these various structures in alternate layers; but in the more advanced stages, the opake white tubercular matter is the most abundant; and this afterwards appears to be gradually softened, degenerating into a soft cheesy matter, or ill-conditioned suppuration, so familiar to us in diseases of this nature. When a gland in the first state of soft fleshy enlargement is plunged into boiling water, its colour instantly changes to an opake white or ash colour; its texture becomes much firmer; it contracts very much in its dimensions; and by a short boiling, it loses a great part of its weight, leaving a residuum of an opake white colour and great firmness, having the appearance of concrete albumen. In the more advanced stages of the disease, the glands lose less and less by boiling; and the opake white tubercular matter, when it can be obtained pure, scarcely loses any thing. In the first volume of the Medico-chirurgical Transactions of Edinburgh, I have mentioned some experiments which render it probable, that,

during these changes in the structure of the glands, there is a gradual deposition of albumen, at first in a soft, afterwards in a concrete state ; and that the peculiar character of glands, in a state of tubercular disease, depends upon the presence of albumen in a very concrete condition, and without organization. It is, however, a matter of curiosity merely, leading to no practical results. Some singular modifications occasionally occur in the state of the diseased mesenteric glands. I have mentioned a case in which they contained calcarious matter, and their cysts were so distended with a gaseous fluid, that they burst with a very sharp explosion, when slightly touched with the knife. A case occurred to Dr. Kellie, in which the diseased glands were enveloped in a very firm covering of bone.

Disease of the mesenteric glands is generally to be considered as a scrofulous affection, occurring chiefly in children, and frequently combined with other affections of a scrofulous character, or with chronic peritonitis. But it is met with under other circumstances, and at advanced periods of life. I shall only add the following example of this, which is rather a rare occurrence.

Case CXV.—A lady, aged about 40, mother of a large family, and previously enjoying excellent health, was affected with a deep-seated painful tumor in the left side of the abdomen, which was at first considered as an affection of the kidney. After some time a similar tumor was felt below the umbilicus ; and soon after a third betwixt the umbilicus and the region of the stomach. They were of large size, and somewhat painful on pressure. The functions of the stomach and bowels were little impaired ; but her general health soon began to suffer. The inguinal glands next began to swell, and increased to a great size ; and chains of

glands were traced from them under Poupart's ligament, and within the abdomen. Enlargement then took place in the glands of the axilla, and on both sides of the neck. Finally, she had cough, with great irritation about the trachea, fits of dyspnœa, hectic paroxysms, and progressive failure of strength; and she died, gradually exhausted, after an illness of nearly two years.

Inspection.—The abdominal tumors were entirely masses of diseased mesenteric glands, some of which were the size of large oranges, and of a firm white tubercular character. There were chains of diseased glands running from Poupart's ligament by the side of the spine; but the abdominal viscera were otherwise healthy. Behind the trachea, and along the posterior mediastinum, there were large masses of diseased glands; and there were some tubercles in the lungs, but of no great extent.

SECTION II.

TYMPANITES.

Tympanites has been usually distinguished into abdominalis and intestinalis. I have never seen such a disease as the tympanites abdominalis, except when air has escaped into the peritoneal cavity, in consequence of perforation of the intestine. Several examples of this have been given. It often requires a great deal of time and attention to discover the perforation, which may very often have escaped notice; and in this man-

ner, probably, has arisen the doctrine of tympanites abdominalis.

The important division of tympanites is into two forms, which, for the sake of names, we may call acute and chronic.

I. Acute tympanites, or that which occurs in connection with acute disease, we have seen taking place in various forms. In its relation to active abdominal inflammation, we have seen reason to believe, that it may occur at an early period, while the inflammation is still in its active state, and be removed when this is subdued; that it may take place at a more advanced period in connection with extensive adhesion, or disorganization of the parts, marking a hopeless state of the disease; or that it may be left as an effect of the disease, from derangement of the muscular power, after the inflammation has been removed, and may, by attention, be entirely recovered from. In Case LXX, again, we have seen tympanites supervening upon diarrhœa, and assuming a very alarming aspect; and in Case L, we have seen it very rapidly fatal, and affecting the whole course of the canal, apparently connected with a general loss of its muscular power. The treatment adapted to this form of the disease has been mentioned in treating of the cases now referred to. It also takes place in connection with continued fever, and is in general rather an unfavourable symptom. In all cases of acute disease, tympanites requires to be watched with some anxiety; but we have seen that it may be recovered from, even under circumstances apparently the most alarming.

II. Chronic tympanites is met with most frequently in females; and it often proves most untractable. When it is accompanied with any degree of wasting, and impaired general health, there is reason to suspect chronic peritonitis, especially if there should be any pain or tenderness of the abdomen. It also occurs in

connection with chronic disease of the mucous membrane, as we have seen in Case CXIV ; and it may be left as the effect of an acute attack, as in Case LXIX. When it does not arise from such causes as these, the treatment must consist chiefly of attention to the general health, with regular exercise, cold bath, and careful regulation of the bowels ; especially by small doses of aloes or rhubarb, combined with tonics and stimulants, as sulphate of iron, quinine, and the stimulating gums. Small doses of turpentine may often be useful ; also friction of the abdomen ; compression by a roller, and perhaps galvanism.

An affection of a singular nature is often met with in females, which appears to be a modification of tympanites, though assuming characters different from the ordinary cases. The abdomen becomes gradually and uniformly enlarged, and is throughout firm and tense, and without the usual feeling of tympanites. It sometimes assumes the character of a mass of organic disease ; and has not unfrequently been mistaken for pregnancy, especially in females who have been married late in life. It is often in such cases accompanied by suppression of the menses, and all the usual symptoms of advancing pregnancy ; and not a few examples have occurred, in which every preparation was made for approaching accouchement, before the nature of the affection was ascertained. If taken at an early period, it generally disappears in a short time under a course of mild purgatives, as Harrowgate water. If neglected, it is apt to become permanent, but without appearing to have any very considerable effect upon the health of the patient, though it often assumes in a great measure the appearance of extensive organic disease. I have had no opportunity of examining the parts in a case of this kind. In its early stages, the affection must consist entirely in a state of distention of the bowels, but the characters of it are very peculiar ; and it is

probable, that in the advanced stages, some change takes place in the parts, which has not yet been investigated.

A remarkable circumstance in the history of some of these affections is, that, after continuing in a most extraordinary degree for a length of time, and resisting every remedy, they sometimes disappear spontaneously. In the Edinburgh Medical Essays, Dr. Monro has described the case of a young woman, whose abdomen became so enormously distended, that it often seemed in danger of bursting. This affection continued three months, and then disappeared by a prodigious discharge of flatus both upwards and downwards.

A remarkable distention sometimes takes place in circumscribed portions of the intestines, forming defined enlargements, with such a degree of firmness, as gives them very much the characters of solid tumors; and I have seen several cases in which, on a superficial examination, such affections were mistaken for masses of organic disease. I have described several cases in which this occurred from remarkable thickening of the coats of the intestine at particular parts: but, in the cases which I now refer to, the coats appear to be healthy, and the affection seems to depend upon a very singular state of distention confined to a small part of the canal. Several years ago, a gentleman from England consulted me respecting a tumor in the right side of the abdomen. It seemed as large as the head of a child; and, when examined while he was in the erect posture, felt quite hard and unyielding; but, on laying him in the horizontal posture, and making pressure upon it, the whole swelling disappeared suddenly with a gurgling noise. It appeared to be the caput coli in a singular state of distention. The affection had existed for a considerable time, and though he was subject to flatulence and indigestion, his general health was little impaired. In my treatise on the Affections of the Brain, I have de-

scribed the case of a woman, who had swelling and hardness occupying the whole right side of the abdomen, and conveying the impression of an extensive mass of organic disease. But when she died, soon after, of an affection of the brain, no vestige of disease could be discovered in the abdomen.

SECTION III.

ARTERIAL HÆMORRHAGE FROM THE RECTUM.

I HAVE seen a good many cases of arterial hæmorrhage from the rectum, and they presented some facts worthy of being recorded. The discharge is usually at first considered as hæmorrhoidal, and does not excite any apprehension, especially as the quantity of blood lost is often not great. But after some time, the patient begins to look pale, haggard, and exhausted; palpitation and breathlessness are excited by any exertion, frequently with attacks of giddiness and a sense of severe throbbing in the head, and sometimes there is anasarca of the legs. The pulse becomes small and frequent, and is excited to the highest degree of frequency by very moderate exertions, perhaps by walking across a room. He becomes more and more exhausted, till he acquires all the appearance of a person sinking under the advanced stage of some deep-seated disease. During this time, he probably complains of nothing except extreme weakness; and says he is sensible of no disease, except a degree of piles, which bleed regularly, but in no great quantity. On examining the parts immediately after he has been at stool, or on making the extremity of the rectum pro-

trude by means of a stipulating injection, a small fungous mass is discovered within the verge of the anus, on the apex of which a minute artery is seen bleeding per saltum. The remedy is simple and effectual, and consists in taking up the bleeding point with a tenaculum and tying it, so as to include a part of the fungus. It is not necessary to go to the base of it ; and in this manner much irritation is prevented, while the cure is equally effectual. The patient soon begins to recover strength, and it is astonishing with what rapidity every appearance of disease vanishes. It is difficult to say what is the source of the alarming character of the symptoms in these cases ; whether the greater permanency of the discharge,—or that there is more exhaustion from the loss of arterial than venous blood ; for the quantity of blood lost is often not so great as, certainly not greater than, is often lost from hæmorrhoids for a length of time, without any effect upon the general health. When the ligature does not entirely command the hæmorrhage, the free application of the nitrate of silver is often very beneficial. The affection is, upon the whole, one of extreme interest, from the alarming appearance of the patient, and the rapid improvement which he makes after the vessel is tied. The disease is sometimes distinguished by the blood coming off in coagulated masses ; and it would appear, that in these cases the minute vessel is nearly at all times bleeding a little, and that the blood coagulates in the rectum, and accumulates, till such a quantity is collected as excites the patient to go to stool. This I think does not take place with the discharge of hæmorrhoids. The affection is also distinguished by the arterial colour of the blood,—that which is hæmorrhoidal being probably always venous.

SECTION IV.

OF A VERY OBSCURE AFFECTION, IN WHICH THE SYMPTOMS ARE CHIEFLY REFERABLE TO THE BOWELS.

The affection which I refer to under this head, would appear to be connected with some morbid condition of the mucous membrane of the intestinal canal, the precise nature of which eludes our observation. The patient is found thin, pale, and weak, with a withered look, a peculiar dry state of skin, and a small weak pulse. His appetite is variable and capricious, and he feels uncomfortable after eating. The bowels are slow, though easily regulated ; and the evacuations are always of a remarkably dark colour, like dark mahogany, or almost black. The obscure nature of the affection will appear most strikingly from the following case, which was fatal.

Case CXVI.—A lady, aged about 30, had been in bad health for four or five months ; and when I saw her, was wasted like a person in an advanced stage of phthisis. She had a small frequent pulse and bad appetite, but complained of nothing except some undefined uneasiness in the abdomen. The bowels were slow, requiring the constant use of medicine ; the motions were consistent and formed, but always of a deep brown colour of dark mahogony or rose wood, and no treatment had any effect in correcting that colour. The abdomen was collapsed, and nothing could be discovered by examination. Sometime after I saw her, she began to have uneasiness in her chest, with slight cough ; she then became liable to fits of coma, in which she lay

with her eyes open, but unconscious of any thing; at length she had repeated paroxysms of convulsion, and she died in a state of the most extreme emaciation, after an illness of eight or nine months duration.

Inspection.—No disease could be discovered in the brain, and the lungs were quite healthy, except some very old adhesions of the pleura. The intestinal canal was throughout so thin, as to be transparent like gold-beater's leaf. On the mucous membrane there was in many places a tenacious mucus of a dark brown colour, but no disease could be discovered in the membrane itself, and no morbid appearance could be detected in any organ.

I do not attempt to explain this case. The only conjecture that can be offered in regard to it is, some morbid condition of the mucous membrane interfering with digestion, and preventing the nourishment of the body. I have seen some other cases which shewed similar characters, and proved very tedious and unmanageable, but I am not aware that any of them have been fatal. The peculiar character in all of them was the remarkably dark colour of the evacuations, which nothing had any effect in correcting. The last case that occurred to me seemed to derive most benefit from the sulphate of iron; and this remedy, which in general makes the evacuations very dark or nearly black, made them in this case decidedly lighter than their usual colour. Another seemed to derive benefit from small quantities of mercury. The patients had in general a peculiar emaciated withered aspect, with a dry state of the skin, a weak pulse, and a variable and capricious appetite; but no actual disease could be discovered capable of accounting for their unhealthy appearance.

SECTION V.

REMARKABLE ABSCESS COMMUNICATING WITH THE CAPUT COLI.

Case CXVII.—A young man, aged 19, on the evening of 16th September, 1827, was seized, after eating freely of pears, with pain of the bowels, accompanied with much vomiting and purging. These symptoms were relieved by the usual means, but were immediately followed by fixed pain in the right iliac region, a little below and inwards of the superior spinous process of the ilium. At first nothing unusual was discovered by examination of the part; but after a few days, a deep-seated circumscribed swelling, about the size of an egg, was felt; it was exceedingly painful to the touch, and gave much pain in motion, but the skin covering it was healthy. The functions of the stomach and bowels were now in a natural state, but there was much fever with high delirium. General and topical bleeding, and all the other usual remedies, which were now carefully administered by Dr. Begbie, failed in giving any relief. Fever continued with high delirium; the swelling was still very tender to the touch, and there were frequent attacks of strong rigors. In the beginning of October, the swelling became more diffused and less painful, and an obscure feeling of fluctuation was discovered in it. On the 3d, he was seized with severe diarrhœa, accompanied by a tympanitic state of the abdomon; the local affection then became less urgent, but the constitutional symptoms continued and assumed the characters of the advanced stage

of low fever, and he died, gradually exhausted, on the 14th.

Inspection.—Immediately above the caput coli, the omentum had contracted a very firm adhesion to the ascending colon and to the parietes of the abdomen; and in this manner was formed a circumscribed cavity, bounded by this portion of omentum, the posterior surface of the caput coli and the portion of peritoneum lining the parietes at the part. This cavity contained a small quantity of ill-conditioned pus, and three or four bodies, which were found to be the seeds of fruit, covered by an earthy incrustation; it communicated with the caput coli by a small irregular opening, and the mucous membrane around the opening was thickened and highly vascular. The cavity of the abscess was also found to extend behind the peritoneum covering the iliac muscles, and upwards, along the whole extent of the lumbar vertebræ.

There is an obscurity in the pathology of this singular case; and it seems difficult to say, whether the abscess had been originally formed and had burst into the caput coli, or whether the perforating ulcer of the caput coli had been the primary disease, and the escape of its contents had given rise to the abscess. The existence of the seeds of fruit, covered by an earthy incrustation, in the cavity of the abscess, would appear to favour the latter supposition.

SECTION VI.

EXTENSIVE DISEASE OF THE RECTUM AND PROSTATE GLAND.—STRICTURE OF THE ARCH OF THE COLON, &c.

CASE CXVIII.—A gentleman, aged 72, had been liable for fifteen years to frequent desire to pass urine, which generally obliged him to get up five or six times in a night, and it was usually accompanied at each time by a desire to go to stool. This at last increased to such a degree, that for several years before his death he scarcely ever made water without having his bowels moved. His general health, however, continued good, until about a year before his death, when he began to fall off greatly in flesh and strength. Soon after his legs became œdematous, and his pulse feeble, and he was greatly distressed with flatulence. The frequent desire to pass urine continued, but it was passed without pain. On examination the prostate was found so much enlarged as to prevent the passage of the finger into the rectum. The abdomen was now tense and tympanitic, and hard deep-seated tumors were felt in various parts of it, especially in the left side, where they were painful on pressure. The bowels continued quite open or easily regulated, and his motions were of a healthy appearance and rather fluid. He died, gradually exhausted, in July, 1827.

Inspection.—The prostate was very much enlarged, and of a soft cheesy consistence, so that it broke down under slight compression. The coats of the rectum were much thickened, and it adhered extensively to the neighbouring parts. The sigmoid flexure of the colon adhered to the brim of the pelvis. The bladder was

much thickened and contracted, but its internal surface was healthy. In the caput coli there was a small ulcer, and in the right side of the arch of the colon there was a thickened and contracted portion about an inch in extent, which admitted only a small finger. The other parts of the colon, both above and below this contraction, were distended with large hard masses of feculent matter, many of them the size of large eggs; and it appeared that they had formed the tumors which were felt during the life of the patient.

It is unnecessary to point out the pathological points which are illustrated by this case. One not unworthy of attention consists in the masses of hard feces in the colon; assuming, in a great degree, the characters of glandular tumors, and some of them being even painful on pressure. It also illustrates in a striking manner that singular state of the bowels, in which fluid feces may be discharged regularly and freely, and apparently in abundant quantity, while there is going on for a length of time an immense accumulation of feculent matter, in a very hardened state, extending through the whole of the colon.

PATHOLOGY

OF

THE LIVER.

In a short dissertation on the pathology of the liver, my intention is to do little more than attempt a slight outline of the morbid conditions to which that organ is liable, without entering minutely, either upon the symptoms or the treatment. My reason for doing so is, that acute affections of the liver are comparatively rather rare in this country, so that I cannot speak of them from much personal observation; and that the chronic diseases are generally obscure in their symptoms, until they are detected by manual examination, and, in point of treatment, are in general beyond the reach of medical aid.

I must at the same time confess my suspicion, that it has become a kind of fashion to refer symptoms to morbid conditions of the liver, without any good ground for considering them as being really connected with that organ. This is so common in the modern phraseology of medicine, that it seems a very delicate task to start a doubt in regard to a doctrine so generally re-

ceived. But, as a practical man, anxious to be guided by observation alone, there are three classes of facts which have appeared to me worthy of much attention in reference to this subject; namely, 1. That I frequently see such complaints get well under very mild treatment, as regulation of the bowels, and a little attention to diet; 2. That I have seen such patients put through long and ruinous courses of mercury, without any benefit, and afterwards found the complaint removed by a course of mild laxatives; and 3. That I have known patients die of other diseases, while these alleged affections of the liver were going on, without being able to discover in the liver, upon dissection, the smallest deviation from the healthy structure. I am ready to admit, that in such an organ as the liver there may be morbid actions which do not leave any appearance that can be discovered on dissection, though they may be the source of uneasy sensations and derangements of function. But such actions, if they leave no trace of their existence, must have been of a very temporary kind. If the symptoms have been of any considerable standing, we are certainly entitled to look for some trace of disease, or else to doubt whether the liver was really the seat of the disorder,—particularly if the symptoms were of such a kind as might with equal plausibility be referred to other sources, such as disordered conditions of the stomach or bowels, especially the duodenum or the arch of the colon.

The structure of the liver, on a superficial examination, has a uniform appearance; but, when minutely examined, it is found to consist of two textures, which in certain states of disease can be clearly distinguished from each other. The one is a cellular or spongy texture or network, which appears to be of a yellowish white or ash colour, and to possess comparatively little vascularity. The other is a substance of a red or reddish-brown

colour, contained in the cells of the former; it is highly vascular, and is supposed to be capable of very rapid increase or diminution of its volume, in a manner almost resembling the erectile tissues. This, however, is probably in some measure hypothetical, and it is probable, that the rapid changes in volume to which the liver appears to be liable, may be rather referred to the great vascularity of its structure, arising from the two distinct sets of blood-vessels which ramify through it in a manner quite peculiar to itself, namely the hepatic artery and the vena portæ. A considerable part of the structure of the liver is also composed of the biliary vessels.

In endeavouring to trace a slight outline of the actual morbid conditions of the liver, it is natural to arrange them into two classes, namely the acute and chronic. There is, however, a difficulty in this arrangement, because the two classes run so much into each other, that cases which begin with very acute symptoms, often become in their progress protracted and chronic. In using the terms, then, as a mere arbitrary division of the subject, I do it with the understanding, that, under the class of acute affections, I include those which are at an early period marked by acute symptoms distinctly referable to the liver, though they may afterwards become protracted; and under the chronic diseases, those in which the affection steals on in an obscure and insidious manner, perhaps only with dyspeptic symptoms,—or in which the affection of the liver is not ascertained till after protracted illness, or when the patient has died of another disease. This distinction is sufficiently correct for practical purposes; and an attempt at minute pathological arrangement on such a subject is often made at the expense of utility. In the following outline I mean to describe chiefly the liver diseases of this country as they have occurred to myself, though with occasional

reference to those of India, as they are described by the best practical writers.

SECTION I.

OF THE MORBID CONDITIONS OF THE LIVER, WHICH APPEAR TO BE CONNECTED WITH ACUTE DISEASE.

§ I.—Inflammation of the liver.

The symptoms of inflammation of the liver seem to vary exceedingly, according to the activity of the disease, and the part which is the primary seat of it. There is generally pain in the right hypochondrium, increased by pressure, and frequently by inspiration, with tension, considerable disturbance of the functions of the stomach, and often urgent vomiting. There is generally fever, but this is often in a very slight degree; there is sometimes jaundice, but this is often entirely wanting; and frequently there is pain extending to the right shoulder, but this also is by no means a uniform symptom. When the inflammation affects the peritoneal coat, it appears that the pain is in general more acute and defined, and accompanied by a higher degree of fever, than when it is confined to the parenchymatous substance. When the upper surface of the liver is the chief seat of the disease, there is often cough, with symptoms closely resembling pneumonia; when it is chiefly in the concave surface, the stomach is more affected; and, when in this situation, jaundice is more likely to take place, which may not appear at all if the disease be chiefly in the convex surface. When the inflammation is seated in the substance of the liver, the

symptoms seem to admit of great variety, and are often very obscure,—the pain being frequently slight and dull, with very little fever; and it appears that the complaint may continue in this state for weeks or months, or may terminate more speedily by abscess or softening, though with very obscure symptoms to the last. The symptoms, however, attending inflammation of the substance of the liver are by no means uniformly obscure, for, in some of the following cases, terminating by abscess, it will appear that they were of a very acute character. I have not seen inflammation confined to the peritoneal covering of the liver, except when combined with extensive and general peritonitis.

The terminations of inflammation of the liver seem to be chiefly the following.

1. It may be fatal in the inflammatory stage.
2. Suppuration.
3. Ramollissement or softening of the substance of the liver, which appears under various forms, to be afterwards more particularly described.
4. By passing into chronic disease.

As some of the appearances, however, which will be referred to under these heads, have not been absolutely ascertained to be terminations of inflammation of the liver, I shall not describe them under this arrangement; but, following the course which I have already proposed, I shall simply refer to them in the general investigation of the actual morbid conditions which we find in the liver after death.

§ II.—THE MASS OF THE LIVER MORE OR LESS ENLARGED, ESPECIALLY ON THE RIGHT SIDE; EXTERNALLY OF A VERY DARK COLOUR, OR NEARLY BLACK; ITS SUBSTANCE, WHEN CUT INTO, ALSO VERY DARK COLOURED, AND GIVING OUT A LARGE QUANTITY OF VERY DARK BLOOD. IN OTHER CASES, THE BLACK COLOUR IS ONLY ON THE SURFACE, THE INTERNAL STRUCTURE BEING TOLERABLY HEALTHY.

This appears to be a frequent morbid appearance of the liver in India, in cases which are rapidly fatal. The symptoms described as connected with it are chiefly a febrile state, with anxious expression of the countenance, nausea, impaired appetite, and very bad digestion, pain, or a sense of weight and fulness in the region of the liver, and great oppression across the præcordia, often oppressed breathing, headach, disturbed sleep, turbid urine, and a sallow colour of the complexion. The disease has been called congestion, but this is merely a name accommodated to the appearance, and explains nothing. It appears to be nearly allied to inflammation, and there seems much reason to believe that it is to be considered as inflammation of the substance of the liver, fatal in the inflammatory stage, or in a stage immediately succeeding the state of active inflammation.

The following is the best marked case that I have seen of the appearance referred to under this section, and the morbid condition appeared to have been very superficial.

CASE CXIX.—A gentleman, aged 28, (6th September, 1822) was seized with vomiting, and for three days vomited every thing which he took into his stomach. There was an obscure uneasiness across the epigastric

region ; the tongue was foul ; the bowels were reported to have been easily regulated ; the pulse from 120 to 130. The vomiting abated after three days, but returned after another day, though with less severity, then subsided again ; and in this manner were passed three days more, being six days from the commencement of the attack, without any other symptom. He was then seized with very deep jaundice, and I saw him for the first time on the following day, 13th September. The jaundice was then very deep ; pulse 120 and strong ; no vomiting ; no complaint of pain, even upon pressure ; tongue white ; bowels open ; stools very dark. Blood-letting was now employed, followed by the other usual remedies. For two days there was little change ; the pulse continued at 120, but less strong ; the bowels open ; the stools dark ; the urine deeply tinged with bile. On the 16th and 17th, the pulse came down, but very deep jaundice continued, with a look of much febrile oppression, but no complaint of pain ; the bowels were freely moved by repeated purgatives, and the motions shewed no want of bile. On the 18th, he was seized with hiccup, which continued very troublesome through the whole day ; the tongue assumed a parched and typhoid character ; the pulse 108, and of good strength ; jaundice continuing very deep. He became from this time progressively worse, and died on the 20th.

Inspection.—The liver was uniformly of a very dark colour, almost black, without any sensible increase of size. When cut into, it appeared that the black colour was very superficial, the internal parts being tolerably healthy. The gall bladder was empty and flaccid ; no obstruction could be discovered in any of the ducts ; and no morbid appearance could be detected in any other organ.

That this black condition of the substance of the liver is a state connected with inflammation, is rendered probable by an interesting case mentioned by Portal, in which it was combined with abscess. A gentleman, aged 50, was seized with shivering, followed by fever, pain in the right side under the false ribs, vomiting, cough, and dyspnœa, and died in seven days, without any particular change in the symptoms, except that a day or two before death, much tension appeared in the region of the liver. In the peritoneal cavity, there was much bloody fluid, with flocculent filaments floating in it. The liver was enormously enlarged; externally, it was of a deep red colour, with pseudo-membranous deposition on its upper surface, and adhesion to the diaphragm; internally, it was of a deep black colour, and discharged, when cut into, much black blood; and there were in various places vomicæ, full of purulent matter.* The combination of this black condition of the substance of the liver with suppuration will also be found in Case CXX.

The earliest stage perhaps at which the morbid appearances of the liver can possibly be seen, occurred in a remarkable case also mentioned by Portal. A lady, aged 28, suffered a sudden cessation of the menses from a violent mental emotion. She was immediately seized with severe vomiting, and complained of acute pain in the epigastric region, extending along the right hypochondrium. After a few hours, deep jaundice took place, with fever, distention of the abdomen, hiccup, and very difficult breathing; and she died on the following day. The liver appeared much enlarged, and when cut into, seemed to be infiltrated with a bloody serous fluid. Its upper surface was covered with false membrane, and the right side of the diaphragm was inflamed. The lungs were much gorged with blood. The other viscera were healthy.

* Portal,—Maladies du Foie.

§ III.—Abscess of the liver.

This must be considered as the result of inflammation of the substance of the liver, but the symptoms appear to vary exceedingly in activity,—in some cases being such as distinctly indicate active disease; in others, stealing on insiduously with little more than a feeling of weight and fulness; and in many cases, most extensive abscesses have been met with, when the symptoms had been merely dyspeptic, or perhaps had been considered as hypochondriacal.

The following cases will exhibit the principal varieties of this affection as it occurs in this country.

Case CXX.—A gentleman, aged 22, (15th June 1817) was affected with pain across the epigastric region, increased by pressure, and accompanied by vomiting and frequent pulse. The case was considered by an intelligent surgeon as Gastritis, and was actively treated by repeated blood-letting, blistering, purgatives, &c. Under the use of these means, the pain was very much relieved, and the vomiting subsided; but on the 18th, being the third day from the commencement of the symptoms, he was seized with very deep jaundice. I saw him on the 20th. His pulse was then from 90 to 96, and soft; the bowels were open; very deep jaundice continued, but there was very little complaint of pain, except some uneasiness on very firm pressure in the region of the left lobe of the liver. On the 21st, there was no change, and very little complaint; but on the 22d, the pulse rose suddenly to 140, without any other change in the symptoms. It subsided at night, but on the 23d was at 160; there was much febrile oppression, and very deep jaundice, with restlessness, slight pain upon pressure, and some tension in the re-

gion of the left lobe of the liver. The usual remedies were persevered in without any effect in controling the disease. On the 24th, he continued in the same state, with an anxious febrile look, and died on the 25th.

Inspection.—The left lobe of the liver contained several small abscesses, full of purulent matter; and there were also several abscesses in the right lobe in the part most contiguous to the left. In other respects, the whole substance of the liver, except a small part at the lower extremity of the great lobe, was very much softened and broken down, and of a very dark or nearly black colour. Both the hepatic duct and the ductus communis were obstructed by large calculi, and a large accumulation of bile appeared to have taken place in the substance of the liver, which flowed out freely when the ducts were laid open. The other viscera were healthy.

Case CXXI.—A lady, aged 51, (23d October, 1816) was affected with incessent vomiting, and severe pain in the region of the stomach, much increased by pressure, and extending downwards towards the umbilicus; bowels open; pulse 84; the symptoms had continued 20 hours. She was treated by repeated blood-letting, blistering, full doses of calomel, &c. In the evening of the 24th, there was considerable relief of the pain, but it returned on the 25th with much severity; it was fixed in the region of the stomach, and was increased by inspiration; and tenderness on pressure extended over a great part of the abdomen. There was less vomiting; pulse 120 and small; bowels open; after further bleeding, there was again much relief of the pain; she breathed with more freedom, and was free from vomiting; pulse 108. On the 26th, the pain returned with much severity, and continued with little abatement on the 27th and 28th. It was chiefly referred to a spot immediately below the ensiform cartilage, and extended into the region of the left

lobe of the liver, where there were some tension and tenderness on pressure. She was now free from vomiting; the bowels were quite open, and the motions dark coloured; the pulse varying from 100 to 120. She was now chiefly treated with calomel, digitalis and blistering. On the 29th, the symptoms began to subside, and in a short time, she was able to be out of bed, and seemed to be convalescent. But it soon appeared that she was not free from the effects of the attack. She had occasional uneasiness in the region of the stomach and liver, with severe nausea, occasional vomiting, and œdema of the legs; pulse sometimes natural, and sometimes rather frequent. The pain recurred in paroxysms, which often extended through the whole abdomen; and she was liable to attacks of vomiting, which continued severe for a day or two at a time, and then subsided; her most permanent and uniform complaint was of constant and severe nausea; and her general aspect was pale and exhausted, but without any appearance of jaundice. Some tension was felt in the region of the liver, but it was very obscure. With various remissions and aggravations of the symptoms now mentioned, the case was protracted for four months, and she died gradually exhausted on the 27th of February.

Inspection.—On the upper surface of the liver, towards the left side, there was an abscess, covered by little more than the peritoneal coat, and containing about a pound of thick purulent matter. The greater part of the liver in other respects was much softened and broken down; and the gall bladder contained a great number of biliary calculi of various sizes. There were some small abscesses in both kidneys. All the other viscera were healthy.

Case CXXII.—A gentleman, aged 67, and enjoying good health, except frequent dyspepsia, had occasion-

ally complained for some time of a pain in his right side, which affected him chiefly when he walked quickly. But he made little complaint, and was not confined to the house, until about three weeks before his death, when he had some irritation of his bowels, with loss of appetite, and an obscure uneasiness across the epigastric region. After another week he was confined to bed, his chief complaint being the frequent irritation of his bowels; the stools were scanty, and composed chiefly of bloody mucus. I saw him only a few days before his death; he was then considerably exhausted; the pulse feeble, but little increased in frequency; the bowels still troublesome, but kept in check by opiates. There was obscure uneasiness across the epigastric region, but without tenderness; and no fulness or hardness was to be discovered either there or in the region of the liver. There was an aphthous state of the mouth, with great difficulty of swallowing, a great deal of hiccup, but no vomiting and no jaundice. From his exhausted state there was now no room for active treatment; he died gradually exhausted, a fortnight from the time when he was first confined to bed.

Inspection.—The liver appeared to be considerably enlarged, and the right lobe was found to have almost entirely degenerated into a large abscess, containing fully three pounds of thick purulent matter, the proper substance of the liver merely forming a very thin cyst around the cavity. At the cardiac orifice of the stomach there was evident inflammation of the mucous coat, with deposition of flocculent matter; and this appearance extended along the whole course of the œsophagus, with much deposition of floeculent matter in thin layers in different places. There were various adhesions of the intestines to each other; internally, the small intestine was healthy; but in the mucous coat of the colon, there was extensive ulceration, mix-

ed with fungous elevations, which extended in a greater or less degree along the whole course of it, and even into the rectum.

These examples will be sufficient to illustrate the remarkable diversity of symptoms which accompany abscess of the liver,—being in some cases so acute as distinctly to indicate the nature of the affection, and in others so obscure, as scarcely to direct our attention to the liver as the seat of disease. In cases of this last kind, the affection, as we have seen, may supervene upon an acute attack, even after we have reason to hope that the inflammation has been subdued; or it may come on in a more obscure manner, without any acute symptoms. In both forms of the disease, the abscess is sometimes found of a most extraordinary size, occupying nearly the whole substance of the liver. A man, mentioned by Hasenoehrl, had hepatitis, from which he was supposed to have entirely recovered, and he had returned to his usual occupations; but he soon after began to have febrile attacks, with progressive wasting, and at last died, gradually exhausted, six months after the acute attack. The first incision into the liver gave vent to an immense quantity of very fetid pus, and when it was entirely evacuated, what remained seemed to be little more than the empty cyst of the abscess. In a similar case by Bonetus, there was found, in place of the liver, a great cyst, formed by its investing membrane in a thickened state, and full of a fluid like the washings of flesh. This man also livid six months from the period of an acute attack, and died gradually exhausted by diarrhœa, in which he passed quantities of a fluid resembling that which was contained in the cyst. I have the report of a case that occurred in Edinburgh, in which an abscess occupying the greater part of the liver, was found in the body of a

man who died gradually worn out by complaints, which, almost to the time of his death, had been considered as hypochondriacal. In a case by Annesly, an abscess of the liver contained 90 ounces of matter, and the parenchymatous substance of the right lobe was entirely destroyed.

In other cases again the disease appears in the form of numerous small abscesses, having no communication with each other. In a case by Andral, which was fatal in thirteen days, the liver was beset with numerous small abscesses no larger than nuts, but each lined by a firm cyst of false membrane, the intervening substance being of a bright red colour and softened. The symptoms were pain and tenderness in the region of the liver, with fever and jaundice. He found, however, the same appearances in a man who died with symptoms of peripneumony without jaundice, and without any symptom referrable to the liver. There were ten small abscesses in various parts of the liver, with a red and softened state of the intervening substance; the right lung was hepatized, with deposition of false membrane. Small cysts containing a thick puriform matter are sometimes found in chronic cases, and appear to be softened tubercles.

When the parts which cover an abscess of the liver form adhesions to the parietes of the abdomen, the abscess may burst externally or be opened, and may heal. In the same manner, by means of adhesions, the matter may be discharged into the stomach or the intestines, especially the colon. In a case by Malpighi the biliary duct was found to communicate with the cavity of an abscess. But the most remarkable course by which it sometimes finds an outlet, is through the lungs, by means of adhesions formed both by the liver and the right lung to corresponding parts of the diaphragm. Numerous instances are on record in which this was ascertained by dissection;

and not a few, in which there was every reason to believe, that it had taken place though the cases terminated favourably. The following is the most remarkable example of this kind which has occurred to me; and which, there seems every reason to consider, as being of the nature now referred to, from the total absence of pulmonary symptoms in the early stages, the tumefaction in the region of the liver, and the immense discharge which took place on the first appearance of expectoration.

Case CXXIII.—A lady, aged about 40, had been affected for some months with uneasiness in the region of the liver, when, on the 5th of November, 1815, she was seized with violent pain in that situation, accompanied with vomiting. By the usual remedies she was much relieved, but some degree of uneasiness continued in the liver for several weeks; it then seemed to subside, but, after a short interval, returned with violence accompanied by vomiting and by fits resembling syncope. The pain was now so violent that for many nights together she was unable to lie down in bed; these paroxysms alternated with intervals of comparative ease, but, by the frequent repetition of them for nearly three months, her strength was very much reduced. The whole region of the liver was tense and tender to the touch, with evident enlargement; the pulse was sometimes small and frequent, and sometimes quite natural. In the end of December she began to have cough, with some expectoration, which had a purulent appearance. This had continued about a fortnight, the expectoration being in small quantity, when, on the 14th of January, she was seized with a violent fit of coughing, and expectorated purulent matter to the amount of at least two pounds. On the 15th she expectorated in the course of the day at least one pound, and about the same quantity on each of the two follow-

ing days. The quantity then diminished considerably till the 25th, when she again brought up about a pound of matter, and the same quantity a few days after. During this time the enlargement and tension in the region of the liver had rapidly subsided, and was now entirely gone. She then continued to have cough with purulent expectoration, but in no unusual quantity, with great weakness and emaciation. These symptoms continued for several weeks, with all the characters of the most advanced stage of consumption; but the expectoration then began to diminish and gradually ceased. She then progressively recovered strength, and by the end of May was free from complaint. She has enjoyed good health ever since.

In such a case as this it has been supposed that the diagnosis may be founded upon a mixture of bile with the matter which is expectorated; but this appears to be without foundation; for as the abscess of the liver is generally lined by a cyst of coagulable lymph, it is cut off from any connection with the biliary ducts.

§ IV.—Simple ramollissement of the liver.

This consists of a broken-down, friable, and softened state of a part of the substance of the liver, without any change of colour. It is in general most remarkable on the convex surface, extending to a greater or less depth; it is accompanied by a separation of the peritoneal coat at the part, and sometimes there appears to be a loss of substance, as if a portion had been torn out, leaving a ragged irregular surface below. The softened portion has commonly so far lost its consistence that the finger can be pushed through it with very little resistance; and in some cases the affected part is infiltrated

with sanious or puriform fluid, not collected into abscesses, but mixed irregularly through the substance of the softened part. This appearance we have every reason to consider as the result of inflammation. It is found in combination with abscess or other marks of inflammation, and I have very often observed it on the upper surface of the liver, in connection with extensive inflammation of the right lung. In these cases there was not in general any symptom indicating that the liver was affected. Mr. Annesley states that this appearance is frequently met with in India in persons who have died rapidly from cholera or dysentery.

§ V.—The black ramollissement of the liver.

I use this term simply to express the appearance, without implying any opinion in regard to the nature of this remarkable affection. It consists in a greater or less extent of the liver being reduced to a black mass of very little consistency, sometimes resembling a soft coagulum of venous blood, and occasionally accompanied by a remarkable fœtor. There is every reason to believe that it is the result of inflammation, and that it is analogous to gangrene. We have seen it complicated with abscess, and, in some observations by Andral, it was met with in cases in which fatal diseases of the liver supervened upon external injuries. It appears, however, to occur without any acute symptoms, for in a case by Boisment* the symptoms were chiefly vomiting, with a slight yellow tinge of the skin. The following

* Boisment.—Obs. sur quelques Maladies du Foie.—Archives Generales, tom. xvi.

is the best marked example of the affection which has occurred to me.

Case CXXIV.—A lady, aged about 50, of a full habit and florid complexion, was suddenly seized in the beginning of June, 1821, with very deep jaundice, for which no cause could be traced. There was no pain, no tenderness, and no fulness in the region of the liver; the pulse was natural, and rather weak; there was little appetite, and some nausea, but no other complaint. The bowels were easily moved, and the motions were dark or brownish. After the free use of purgatives, &c. she began to take a little mercury. For a week after this she seemed to be improving, but she then became more oppressed, with frequent complaint of nausea, and a feeling of languor; the tongue was white, but the pulse was natural. No other symptom was complained of, and nothing could be discovered in the region of the liver. On the 16th she began to have some vomiting, which occurred occasionally for three days, without any other change in the symptoms, until the 19th, when streaks of a black substance were observed in the matter which was vomited. The vomiting now became more and more urgent, with increase of the quantity of this black matter, and she died gradually exhausted on the morning of the 21st.

Inspection.—The liver was reduced to a little more than a third of its natural size; it was of a very dark, almost black, colour, and internally soft and disorganized, like a mass of coagulated blood. The gall bladder was empty and collapsed. The stomach and bowels contained a considerable quantity of black matter, similar to that which had been vomited, but were in other respects quite healthy.

The appearance described under this head is probably a sequel to the condition described under § II.; and it

appears to admit of various modifications. In a case by Boisment the tissue of the liver was infiltrated with dark blood, the substance, in other respects, was dark and friable, and beset with small friable tumors of a reddish brown colour; in other places there were small cavities, containing a soft semi-liquid fluid like grumous blood. Little account is given of the symptoms; but the case seems to have been protracted, and to have been accompanied, towards the conclusion, by hæmatemesis.

§ VI.—The white or encephaloid ramollissement of the liver.

The nature of this affection has been little investigated. I have placed it among the acute diseases on account of the degree of pain which occurred in the following case, which is the best example of it that I have met with.

Case CXXV.—A gentleman, aged 65, in September, 1820, was seized, during a journey on horseback, with diarrhœa, the motions being black and pitchy. He then had pain in the region of the liver, which for several days was so severe that he could not bear the motion of his horse. It then subsided considerably, and, after his return home in the end of the month, he was able to walk about a good deal without appearing to suffer much uneasiness. On the 1st of October there was increase of the pain, with fever, and the pain extended to the right shoulder. He was now largely bled and blistered, &c. and the acute symptoms were soon removed; but he was never free from pain in his right side, and after some time he began to have cough, with copious mucous expectoration. He took mercury with apparent relief, and for a short time was better; but in the end of November he began to lose flesh, and

the pain in the right side continued. I saw him for the first time on the 11th of December; he was then much emaciated, with some anasarca of the limbs; there was still fixed pain in the region of the right lobe of the liver, but nothing could be discovered by pressure, and there was no appearance of jaundice; the pulse was frequent and weak. The debility and dropsical symptoms increased progressively, and he died, gradually exhausted, on the 5th of February.

Inspection.—The liver scarcely exceeded the natural size; its edge projected somewhat below the margin of the ribs, but had not been felt on account of a very firm attachment to the arch of the colon, by which it was bound down and thrown backwards. Its whole structure was altered in a remarkable manner from the healthy state; externally, it was closely covered by innumerable small semi-transparent tubercles, set very close together, and the largest of them scarcely exceeding the size of a split pea; internally, it was soft and of a white or ash colour, very much resembling the substance of the brain, and in many places almost of pulpy consistence; scarcely the smallest portion could be discovered that retained any thing like the healthy appearance. There was considerable effusion in the abdomen; the other viscera were healthy.

§ VII.—Copious deposition of gelatinous matter of a soft consistence and a reddish colour.

This appearance is described by Portal as occurring both throughout the substance of the liver and on its surface, raising the peritoneal coat into irregular soft tumours, accompanied with great enlargement of the liver. The case was of several months standing, and was distinguished by pain in the epigastric region and

vomiting, at first occasional, but becoming gradually more frequent; there was progressive wasting, and at last, dyspnœa and anasarca.

§ VIII.—Remarkable distention of the biliary vessels.

This occurred in a case by Boisment to such an extent as to give the liver the appearance of a large undulating cyst. The appearance was found to depend upon a remarkable distention of all the biliary vessels, with dark coloured bile, and was accompanied by wasting of the proper substance of the liver. The affection seemed to depend upon a singular obstruction of the common duct by a membranous band which passed over it.

SECTION II.

OF THE CHRONIC AFFECTIONS OF THE LIVER.

I have already stated, that by chronic affections of the liver I mean chiefly those in which the symptoms steal on in a slight and obscure manner, without any complaint distinctly referable to the liver, until an advanced period of the disease, when perhaps the liver is felt to be enlarged, or symptoms occur which point out the seat of the affection. In other cases the morbid

condition of the liver is discovered only when the patient has died of some other disease. The distinction, I have already admitted, is entirely arbitrary, but it seems to answer the purposes of practical utility in the division of the subject.

The morbid changes of the liver which come under this class appear to be chiefly referable to the following heads :—

§ I.—Chronic inflammation of the liver.

This term is applied to a morbid condition of the liver which often remains after an acute attack, and a corresponding condition may come on gradually without any acute symptoms. The symptoms are chiefly those of deranged functions. There is more or less pain or feeling of weight in the region of the liver, sometimes accompanied by a degree of tenderness ; there are severe and untractable dyspeptic symptoms, wasting, and sometimes jaundice ; in other cases, pale evacuations without jaundice. There is generally a feeling of distention and oppression in the epigastrium and right hypochondrium ; often vomiting and pain, or a dragging sensation referred to the right shoulder. The bowels are generally slow, the tongue loaded, and the nights restless ; there is commonly a leucophlegmatic aspect, often with febrile paroxysms towards the evening, and a peculiar burning sensation in the hands and feet. On examination, some degree of enlargement of the liver can often be discovered, but this is frequently wanting or very obscure ; or the principal seat of the disease may be in the posterior parts, where it cannot be discovered by examination. The morbid appearances in these cases usually consist of some degree of enlargement of

the liver, especially of the right lobe ; the substance is generally dark coloured or variegated in various ways, with streaks of a lighter colour, its consistence is frequently more dense than natural, but in other cases it is soft and friable ; abscesses are me t with in some cases, and in others tubercles.

§ II.—Simple enlargement of the liver without change of texture.

This I think is most frequently observed in young persons of a scrofulous habit, but is occasionally met with at a more advanced age ; the liver perhaps descending as low as the umbilicus, without any remarkable change of its texture. It appears in some cases to be connected with a low and protracted inflammatory action ; and in others, to depend upon causes impeding the return of the blood from the liver towards the heart. In this manner the liver is frequently found to be enlarged in connection with diseases of the heart. In a case by Andral, in which the patient was liable to severe paroxysms of the symptoms arising from the disease of the heart, the liver was distinctly felt to become enlarged during the paroxysm, and to subside again when the attack was relieved by blood-letting. When this simple enlargement is of a more permanent kind, the symptoms seem to consist chiefly of derangements of the stomach, arising probably from the increased bulk of the liver ; in some cases there is jaundice, and in others dropsy ; but upon the whole, simple enlargement of the liver, without any considerable change of its texture, must perhaps be considered as a rare affection in adults. The following case will illus-

trate the appearance, as it occurs in young persons of a scrofulous habit.

Case CXXVI.—A boy, aged 11, in winter 1811-12, was seized with great enlargement of the glands under the jaw, his neck being completely beset with a chain of them of a very large size, extending from ear to ear. He improved considerably during the summer, but in the following winter he became languid and impaired in strength, with variable appetite and irregular attacks of fever. In the following summer, he was affected with cough and dyspnœa, and it was now discovered that his liver was so much enlarged, that the edge of it was distinctly felt as low as the umbilicus. He had a wasted and withered look, with cough, frequent pulse, enlargement of the abdomen, and anasarca of the legs; the latter increased to a prodigious degree, and he died after protracted suffering in October, 1813.

Inspection.—The liver extended rather below the umbilicus, and so much into the left side as to fill the upper half of the abdomen. It was a little paler than natural in its colour, but in other respects was scarcely altered from the healthy structure. There was extensive disease of the mesenteric glands. The lungs were slightly tubercular, and there was a chain of enlarged glands, some of them as large as walnuts, extending behind the lungs from the bifurcation of the trachea to the diaphragm; some of these were of cartilaginous hardness, others contained thick purulent matter, and in others there were hard calcerous particles. There was considerable effusion in the abdomen.

§ III.—Tubera of the liver without other disease of its structure.

These tubera present externally a surface elevated into numerous irregular knobs, of a yellowish or ash colour, and perhaps from two to three inches in diameter. Internally, they exhibit a variety of textures—in some cases fibrous, in others, tubercular, or cheesy, and frequently there are cysts containing a viscid fluid. It appears that they produce marked symptoms only when they are numerous, or accompanied by enlargement of the liver, or disease of its general structure; but that, when the structure is otherwise healthy, they may exist without any symptom calculated to produce a suspicion of their presence. Of this I shall only add the following example.

Case CXXVII.—A gentleman, aged 80, had enjoyed uninterrupted good health until a few weeks before his death, when he became one day suddenly incoherent. This was removed by purgatives, and he had not shewn any other symptom of disease, when one morning he was found dead in bed.

Inspection.—No morbid appearance could be discovered to account for his sudden death, except that all the cavities of the heart, the aorta, and the vena cava, were completely empty of blood. On the convex surface of the liver, there was a tumor about three inches in diameter, elevated into numerous irregular knobs; on cutting into it, a cavity was exposed capable of holding about ʒ 8, and full of an opake ash-coloured fluid, which could be drawn out into strings. The liver in other respects was perfectly healthy.

For a more particular account of these tubera, I refer to the description and engravings of Dr. Farre.

§ IV.—The pale degeneration of the liver, consisting of change of colour without remarkable alteration of texture.

Under this head I mean to include a class of morbid changes of the liver of frequent occurrence, though presenting considerable varieties. The liver so affected has lost, in a greater or less degree, the healthy appearance, and has become of a paler colour, without any considerable alteration from the healthy texture. This change, in some cases, consists merely of a much paler shade of the natural colour; in others, it is a dull white or ash colour, and frequently a uniform dull yellow, closely resembling the colour of impure bees wax. The liver thus affected may be of the natural size, or it may be increased in size, or it may be diminished. The symptoms accompanying these changes have not been well investigated; they are chiefly observed when the patient has died of some other affection, and are scarcely themselves to be considered as fatal diseases, though there may have been symptoms indicating some derangement of the functions of the liver or the stomach. The most remarkable of these changes is the yellow degeneration of the liver, which, from its resemblance to wax, has received from the French writers the name of *Cirrhose*. It is sometimes found in irregular portions, mixed with the healthy structure, and sometimes in small nodules like peas dispersed through the substance of the liver; but, in many cases, the whole liver is found changed into one uniform mass of this appearance, exactly resembling a

mass of impure wax, and it seems to possess very little vascularity. A case is described by Clossy,* in which the structure of the liver was wholly constituted of a congeries of little firm globules, "like the vitellarium of a laying hen;" it occurred in a boy of 15, who had immense ascites. In a case by Boisment, these nodules were as large as peas, and the liver was diminished in size; the case was chronic with ascites. The French writers have a controversy whether the Cirrhose or yellow degeneration of the liver be a new formation, or a hypertrophia of a yellow substance, which they suppose to constitute a part of the structure of the liver in its healthy state. No good can arise from such discussions, as it is impossible to decide them.

§ V.—Pale colour of the liver with induration.

The degree and aspect of the pale induration of the liver varies in different cases, from an appearance resembling a mass of tubercular lung, to that of true scirrhus, or to a texture in some places almost cartilaginous; and, in some cases, there is a firm fibrous texture with a softer matter in the interstices. These morbid appearances may be confined to portions of the liver, or the whole organ may be entirely changed from the healthy structure. The colour of the diseased parts varies considerably; the most common is a dull ash colour, sometimes with a considerable tinge of yellow. The disease may be complicated with hard tubercles of various sizes, embedded in the substance of the liver, or spread over its surface under the peritoneal coat; or there may be thickening or tubercular disease of the peritoneal covering itself.

* Clossy.—Observations on some of the Diseases of the Parts of the Human Body.

A liver in this state of disease may be not at all altered in its size, or it may be much increased, or it may be very much diminished. The symptoms, of course, will differ in some respects in connection with these varieties. The following cases will illustrate the principal modifications.

(A) *Pale Indurated Liver almost Cartilaginous, of the Natural Size.*

Case CXXVIII.—A man, aged 45, in the beginning of May, 1813, was affected with severe pain in the region of the stomach, which soon shifted into the right hypochondriac region among the lower false ribs; it was much increased by respiration; there was some cough; pulse 120. In the course of two days and a half, he was bled to the extent of ʒ 145; the symptoms then yielded, and soon after he went to the country. But he did not recover sound health: he had some cough and dyspnœa, with much debility; after some time he became dropsical; the dropsical symptoms increased with pain in the right side, and he died in the beginning of August.

Inspection.—There was extensive effusion in the abdomen. The liver was completely changed in its texture, being, through its whole structure, of a dull white colour, and very hard, in many places almost cartilaginous. There was not the smallest portion of it that retained the healthy structure or colour, but it was entirely of the natural size. The lungs and all the other viscear were healthy.

There is every reason to believe, that in this important case the remarkable disease of the liver supervened upon the acute attack, which occurred three months before the patient's death; and therefore, according to

the division upon which I have proceeded, it ought to have been included among the acute affections. I have introduced it here, because the pale induration appears in general to be a chronic disease; but it will, at the same time, be right to keep in mind the evidence afforded by this case, that an inflammatory attack may lay the foundation for it.

(B.) *Pale Indurated Liver with Enlargement.*

Case CXXIX.—A lady, aged 45, had long been liable to dyspeptic complaints; but she was often for a considerable time together entirely free from them, so that no suspicion had been ever entertained of the presence of organic disease. She also frequently complained of pains in the back, neck, and shoulders, which had merely a rheumatic character. In autumn, 1818, she went to Harrowgate, and seemed to derive much benefit from the use of the water. In the following winter, she was again a good deal confined, complaining chiefly of wandering rheumatic pains, with bad appetite, and very bad digestion, and a feeling of oppression across the region of the stomach. On examination, the liver was now found to be much enlarged and very hard, but without pain or tenderness. In January, 1819, she began to lose flesh and strength; the pulse became small and frequent, with difficulty of breathing, and effusion in the abdomen; and she died, gradually exhausted, in the end of February.

Inspection.—The liver was very much enlarged, so as to extend quite into the left side of the abdomen, and to descend three or four inches beyond the line of the ribs; in the epigastric region, its margin formed an adhesion to the parietes of the abdomen. Internal-

ly, it was entirely changed from the healthy structure, being of a pale or ash colour, and very firm in its texture, in many places nearly cartilaginous; scarcely any part of it retained the healthy appearance. There was considerable effusion both in the abdomen and the thorax, but the intestines and the lungs were healthy.

Case CXXX.—A lady, aged 50, had for some time complained occasionally of an uneasy feeling across the epigastric region, which chiefly impeded her in stooping. About three weeks before her death, she first consulted me on account of a disease of the mamma, and the affection of the liver was then ascertained only by accident; it filled the upper part of the abdomen, extending from side to side, and on the right side descended as low as the region of the kidney. The whole felt as hard as bone, and was so much elevated, that, even when she lay on her back, the margin of the ribs could not be traced; but the bones of the thorax and the surface of the tumor felt like one continued bony substance as low as the umbilicus. At this time her general health was little affected: but after a short time she had some vomiting of blood; she was then confined to bed, and died after nine days, without any urgent complaint except occasional retching.

Inspection.— The swelling consisted of an immense irregular enlargement of the liver; it was variegated in its appearance, being partly of a pale ash colour, and partly of a dark reddish brown; internally it was uniformly pale and hard in its texture.

(C.) *Pale Indurated Liver, with great Diminution of Size.*

Case CXXXI.—A man, aged 40, was first affected with pain in the right side, not increased by pressure, and not impeding respiration; he had then severe cough, at first dry, afterwards with mucous expectoration, which was very copious and often tinged with blood. He had afterwards hectic paroxysms with progressive emaciation, and at last general dropsy; and died, gradually exhausted, after an illness of about 18 months.

Inspection.—There was some effusion in the cavity of the pleura, but the lungs were quite sound. The liver was so remarkably diminished in size, as scarcely to exceed the bulk of the hand half-folded; it was closely drawn up under the ribs, and adhered intimately to the diaphragm. Its surface was studded with numerous tubercles; internally it was of a pale colour, and very hard in its texture.

Many cases are on record, in which the indurated liver was much diminished in size, but in few perhaps to the extent which occurred in this case. A man mentioned by Andral, had weakness, loss of appetite, and pain of his loins and shoulders, which affected sometimes the one shoulder, and sometimes the other. He had at length slight yellowness of the skin and of the eyes, and then asthmatic attacks, and died after 6 months. The liver was very much diminished in size, and internally was of a scirrhous hardness; its surface was covered with a kind of sandy matter. A man mentioned by Boulland,* had pain in the region of the liver, and very deep jaundice; he died the day after

* Mem. de la Soc. Med. D'Emulation. Tom. ix.

his admission into the Hotel Dieu, and nothing was known of his history except that the jaundice was of six weeks standing. The liver was found much diminished in size and indurated; internally it presented a variegated surface of gray and yellow, with numerous small portions of an orange colour. In other cases, this state of disease has been marked merely by wasting, with obscure dyspeptic symptoms, and at last dropsy, without any thing calculated to point out the liver as the seat of the disease.

A remarkable peculiarity in Case CXXXI, was the violence of the pectoral symptoms. This effect of certain diseases of the liver will be afterwards more particularly referred to; it seems to be occasioned by the irregular tuberculated state of the convex surface of the liver, keeping up a constant irritation of the diaphragm.

§ VI.—Dark induration of the liver.

The following case will illustrate this modification of the disease, which differs from the pale induration only in its pathological characters, the symptoms being the same.

Case CXXXII.—A gentleman, aged about 60, in spring 1821, was observed to look ill, and had a yellow tinge of his eyes, but without any particular complaint till the middle of June, when he became dropsical in his legs, and soon after in the abdomen; pulse natural; breathing easy; appetite tolerable; urine scanty. Nothing could be detected in the region of the liver. There was much distention of the abdomen, which appeared to be partly from fluid, but to be in a great measure flatulent. He took a variety of diur-

etics with a little mercury, for some time with very little effect; on the contrary, the distention of the abdomen seemed gradually to increase, with an evident fluctuation. He then used mercurial friction over the abdomen, when the diuretics began to take effect; and in the end of July, there was much increase of urine, and the swellings were diminished. This favourable state continued till the 7th of August. On the morning of that day, as he was preparing to get up at his usual time, after a tolerable night, he became suddenly livid in the face, and instantly expired. The only previous change in his symptoms had been, that, for about two days before his death, his appetite had been somewhat impaired, and his pulse, which had been previously quite healthy, was occasionally observed to be slightly irregular.

Inspection.—There was effusion in the abdomen to the amount of about 10lbs. The liver was entirely of the natural size, but very dark in the colour, nearly black, and covered on the surface with small hard black tubercles. Internally, it was much indurated throughout, and of a very dark brown colour, interspersed with streaks of deep yellow. The heart was remarkably soft and flaccid, and all its cavities were empty; there was extensive ossification of the coronary arteries, and several of the valves were also partially ossified. The brain and the lungs were healthy.

§ VII.—Tuberculated disease on the surface of the liver without disease of its structure.

The symptoms arising from this affection vary according to the part of the liver which is the principal seat of the disease, as they consist chiefly of irritation of neighbouring organs, particularly the stomach and

the diaphragm. The disease may assume any of the forms which already have been referred to, as the black or the pale tubercle, and in some cases appears to consist of a simple elevation of the surface of the liver into irregular tumors, without any remarkable change in the structure of the part. When the disease is so situated as to irritate the stomach, we find protracted vomiting, with gradual loss of strength; but one of the most remarkable effects of it, when the disease is so situated as to produce constant irritation of the diaphragm, is to prove fatal with protracted pulmonary complaints, without any symptom referable to the liver. The following case will illustrate this modification of the disease.

Case CXXXIII.—A lady, aged 35, had severe cough with dyspnœa, which was sometimes severe, especially in the night. There was occasional pain of the chest and sides, with frequent pulse, restless nights, with febrile paroxysms and perspirations in the morning. There was considerable expectoration, which consisted chiefly of viscid mucus, but was frequently mixed with portions of a puriform character, and occasionally with blood. She was liable to periodical fits of vomiting, which attacked her generally in the evening, and she frequently complained of pain, which was referred to the left side of the abdomen, about the region of the spleen; but no disease could be detected either there or in the liver. These complaints went on for upwards of two years, without materially injuring her strength; but in the third year she became gradually exhausted. She then had diarrhœa, anasarca, and gradual emaciation, and died at the end of the third year from the commencement of the complaint. Towards the end of her life, the vomiting became less frequent, but she continued to suffer from most severe paroxysms of cough, with copious expectoration and fits of dyspnœa

Inspection.—No morbid appearance could be detected in any part of the thorax. The spleen was enlarged and hard. On the convex surface of the liver there was a remarkable tumefaction pressing against the diaphragm, and pushing it upwards; and the surface of the tumefied part was studded with small hard tubercles. The liver was not in other respects diseased, and the other viscera were healthy.

Another case has been formerly described, shewing the production of severe pectoral symptoms by disease on the surface of the liver; and various cases are on record, shewing the same result from diseases of other organs, situated in the neighbourhood of the diaphragm. In a case by Portal, similar symptoms appeared to arise from scirrhus of the pancreas, and in one by Bonetus, from disease of the spleen. In a case by Morgagni, there was a tumor, which weighed a pound, attached to the posterior part of the stomach. A young woman, mentioned by Laennec, had cough, dyspnœa, copious expectoration, hectic fever, and great wasting. After these symptoms had gone on for some time, and she was considered as decidedly phthisical, she was seized with violent pain in the epigastrium, and soon after discharged by stool an immense quantity of hydatids; from that day she recovered rapidly, and was soon well.

§ VIII. Tubercles and tubera of various characters diffused through the substance of the liver, with disease of the intervening structure.

The mixed masses of disease which I include under this head, seem to derive their character, in some instan-

ces, from new formations imbedded in the substance of the liver, in others from morbid degeneration of portions of the liver itself. The appearances vary in different cases ; in some there are portions or nodules of a true scirrhous character, in others tubercular or cheesy, in others of the consistence of the brain ; some portions are of a yellow colour resembling the cirrhose, others of a dark brown or nearly black appearance. These various states of disease may sometimes be traced in the same liver ; they may be interspersed with portions in a tolerably healthy state, and they may be farther varied by the appearance of small cavities containing a glairy fluid, or by the presence of real hydatids. The liver which is the seat of these varied forms of disease may be little altered from the natural size, or it may be very much enlarged. A remarkable circumstance in the history of the affection is the slight and obscure symptoms with which the disease may advance even to a prodigious degree of enlargement. I shall only add the following example.

Case CXXXIV.—A gentleman, aged 67, had been for many years dyspeptic, but without any affection of his general health till the spring of 1820, when he began to decline considerably in flesh and strength, and complained chiefly of a feeling of oppression about his chest. He went to the country and improved considerably, but in May he became worse. His chief complaint was then of a fixed pain in the lower part of his back, with restless nights ; he was able to take a good deal of exercise on horseback, but complained, that, after riding, the pain in his back was increased. He came to Edinburgh in June. He was then a good deal fallen off in flesh and strength, and his pulse was a little frequent ; but his appetite was good, and he made no complaint of his digestion ; his chief complaint was still of a fixed pain in the lower part of the back. On

examination nothing was discovered in his back; but a mass of disease was felt in the abdomen, extending from the ribs to near the spine of the ilium chiefly on the left side. It was not at all painful on pressure, and he could give no account of the origin or progress of it, having never taken notice of it until it was pointed out to him. There was now a gradual failure of strength without any urgent symptom. His appetite and digestion continued tolerable until eight or ten days before his death, when he began to have nausea with thirst, foul tongue and impaired appetite; and he died gradually exhausted in the beginning of August. His bowels had been throughout natural or easily regulated, and the motions quite natural.

Inspection.—The whole liver was enormously enlarged, especially the left lobe, which descended nearly to the spine of the ilium. Externally it was of a very dark colour, variegated with light ash-coloured spots. Internally it was composed chiefly of numerous round tubera, of the size of small oranges; they were generally of a white or ash colour, some of them approaching to a scirrhous hardness, others of a softer consistence, and some of them contained a fluid of a puriform character. In the interstices betwixt these tubera there were portions which retained the appearance of the proper structure of the liver, but they were of very small extent, dark coloured, and of a soft consistence.

It appears that the form of disease which occurred in this case is sometimes much more rapid in its progress. A man mentioned by Andral, died with fever, vomiting, and pain in the right hypochondrium, having begun only about a month before to complain of some uneasiness in the region of the liver. The liver was

much enlarged, and presented a mixed mass of disease, scirrhous, encephaloid and tubercular.

§ IX.—Hydatids.

Hydatids are of frequent occurrence in the liver, and are found either in cysts attached to its outer surface, or imbedded in its substance. The cysts in which they are contained are sometimes lined with a thick coating of false membrane, and not unfrequently there are found in them portions of bone. A liver which contains hydatids may be enlarged and otherwise diseased, or it may be quite healthy except with respect to the cyst which is imbedded in it. There are no symptoms which mark the presence of hydatids in the liver, distinct from those of the other chronic affections, and they have been found where patients died of other diseases without any symptoms referable to the liver.

§ X.—Large cysts containing watery matter confined under the peritoneal coat of the liver.

These cysts may appear either upon the convex or concave surface of the liver. The following is the most remarkable example that has occurred to me.

Case CXXXV. A man, aged 32, was affected with an immense tumour of the abdomen, which filled the greater part of it, extending from the region of the liver considerably below the umbilicus, and into the left side. At the upper part, near the ribs on the

right side, there was an evident fluctuation; this was most remarkable when he was in the erect posture; in the horizontal posture it seemed as if the fluid retired under the ribs; no fluctuation was perceived in any other part of the mass. His breathing was much oppressed and laborious, especially when he attempted to turn on the left side; he then seemed in danger of instant suffocation, for several minutes gasping in the utmost agony before he recovered his breath; similar attacks were produced by other causes, especially any bodily exertion. He was much emaciated; and the complaint was of about a year's standing. A puncture was made on the spot where the fluctuation was felt, and clear serous fluid was drawn off to the amount of nine or ten pounds; and the opening continued to discharge freely for a good many days. By this evacuation, he was very much relieved, but his strength continued to sink, and he died about ten days after the operation.

Inspection.—The liver was very little enlarged. The tumor was found to consist of an immense sac formed on the convex surface, under the peritoneal coat; it was of such a size that it had, on the one hand, pressed down the liver below the umbilicus, and on the other, had pressed the diaphragm upwards as high as the second rib. The right lung was consequently compressed into a small flaccid substance, less than a kidney; the left lung also was much diminished in size, and the heart was as small as that of a child of five or six years. This immense cyst adhered firmly to the posterior half of the diaphragm, but betwixt it and the anterior part of the diaphragm there was a distinct cyst, containing a watery fluid. It was this which had been opened in the operation; but the great cyst was entire, and contained lb. 18 of transparent colourless fluid. Its parietes were firm and dense, like the peritoneum very much thickened. In the bottom of this cyst there were found two

singular bodies, consisting of flat cakes of a soft gelatinous matter rolled up into solid cylinders; when unrolled, they were about ten inches in diameter, and about one-eighth of an inch in thickness, and had the appearance of a deposition which had been separated from the inner surface of the cyst. The liver was not diseased in its structure, and the other viscera of the abdomen were healthy, but remarkably displaced, the stomach being on the left side and the pylorus towards the left os ilium.

A remarkable circumstance in this case was the uncommon firmness of the tumor, which imparted the idea of an immense mass of organic disease, without any fluctuation, except at the part which was opened. A case considerably similar occurred in the Infirmary of Edinburgh many years ago, under the care of the late Dr. Gregory. It was supposed to be an immense enlargement of the liver; but one day the whole hardness suddenly disappeared, with a feeling to the patient of something bursting internally. Fluctuation then became evident, though none had been perceived before. The patient died next day, and it was found that this remarkable change had taken place by the cyst bursting into the cavity of the peritoneum. Mr. Annesley mentions a case in which there was attached to the concave surface of the liver a cyst containing a quart of watery fluid, with a hydatid floating in it.

The above outline, which was intended to be merely an enumeration of the principal morbid conditions of the liver, has extended to a greater length than I expected; and I shall therefore allude but very briefly to what remains of the subject, namely, the treatment of

these affections. I have already referred to a fact which I conceive to be of the utmost importance, and deserving the most serious attention of practical men. I allude to a prevailing doctrine, or rather prevailing phraseology, by which numerous symptoms are ascribed to disease of the liver upon very vague and inadequate grounds; while, in many of these cases, a little attention would show, that the affection is seated entirely in the stomach or bowels, especially in the arch of the colon. The prevalence of this doctrine, and the indiscriminate employment of mercury, which has arisen from it, I must hold to be evils of no small magnitude; and the utmost attention and caution ought to be used before pronouncing a train of symptoms to be dependent upon the liver. We have seen abundant grounds for believing, that there is no class of diseases in which the symptoms are often more obscure, and the diagnosis more difficult; and, consequently, that there is none in which the scientific practitioner will find himself constrained to use greater circumspection.

The real diseases of the liver resolve themselves into two great classes, the acute and the chronic. The acute affections are to be combated by the means adapted to other inflammatory diseases, namely, general and topical blood-letting, blistering and saline purgatives. In the less active cases, indicated by local pain and tenderness, without constitutional disturbance, we rely chiefly upon repeated topical bleeding, blistering, issues, free and continued purging, and a careful regulation of diet. In both cases, when the activity of the disease is subdued by these means, benefit is obtained from the cautious use of mercury; and it seems in general to be most advantageously applied by friction.

In regard to the chronic affections of the liver, under the various forms which have been detailed in the preceding observations, it will probably be admitted that a

large proportion of them are beyond the reach of any human means. The treatment of these ought to be entirely palliative, consisting of a careful regulation of the diet and the bowels, with mild tonics, &c. This I conceive to be a point of much practical importance, because these affections often exist for a long time without materially injuring the health of the patient; and by treatment entirely palliative, his life may be perhaps prolonged, and certainly rendered more comfortable. But when such cases are treated actively by courses of mercury, the strength uniformly sinks in a very rapid manner, and the patient's life is often evidently shortened. In several cases of chronic affections of the liver, accompanied by jaundice, I have seen very good effects from the external use of Iodine, in an ointment containing ℥ fs to ℥ 1 of axunge.

In the preceding observations I shall probably be charged with attaching too little importance to mercury in the treatment of this class of diseases, and I am well aware of the delicate ground on which I tread, when I venture to express a doubt of its adaptation to all stages and all forms of diseases of the liver. In doing so I would be distinctly understood to express myself in regard only to the liver diseases of this country, having no experience of any other; but in respect to these I have no hesitation in saying, that mercury is often used in an indiscriminate manner, and with very undefined notions as to a certain specific influence which it is believed to exert over all the morbid conditions of this organ. If the liver is supposed to be in a state of torpor, mercury is given to excite it; and if it is in a state of acute inflammation, mercury is given to moderate the circulation, and reduce its action. Effects the most indefinite, if not contradictory, are also sometimes ascribed to it in regard to its influence on the secretion of bile, and in those affections which are com-

monly called bilious. Upon the principles of induction with regard to cause and effect, which are recognised in other sciences, it may be doubted whether all these maxims can be right, but I will not take upon me to decide which of them is wrong. I leave the subject, therefore, with merely throwing out these doubts, the force of which must be felt by every pathological inquirer; and with hazarding the opinion, that much of the prevailing doctrine on derangements of the liver requires to be revised, and perhaps corrected. There are certainly many parts of it, of which the pathologist must be allowed to doubt, whether they are not at variance with the principles of philosophical inquiry.

APPENDIX

TO THE

PATHOLOGY OF THE LIVER.

SECTION I.

HÆMORRHAGE FROM THE LIVER.

A GENTLEMAN mentioned by Andral, previously in perfect health, on getting up one morning complained of some uneasiness in the abdomen, and returned to bed, where he was left alone for some time; when his attendants returned to the room he was dead. On inspection, much extravasated blood was found in the cavity of the abdomen, which appeared to have proceeded from a lacerated opening in the substance of the liver; this led to a small cavity full of coagulated blood, and the hæmorrhage was distinctly traced to the rupture of a branch of the vena portæ.

SECTION II.

RUPTURE OF THE LIVER BY EXTERNAL VIOLENCE.

CASE CXXXVI.—A man sitting carelessly upon the edge of a cart was thrown from it by a sudden jerk

upon the road. He immediately got up and scrambled into the cart which was still in motion, and did not appear to a person who was along with him to have received any injury, but he soon became faint, and in a few minutes was dead. On inspection, the liver was found to have been ruptured through a great part of the right lobe, and there was extensive hæmorrhage in the cavity of the abdomen.

SECTION III.

DISEASES OF THE GALL BLADDER.

I. The most common affection of the gall bladder consists in the formation of biliary calculi; but I do not enlarge on this subject, having nothing of any interest to offer beyond the facts which are familiar to every one, and shall only add the following case in which a gall-stone sticking in the common duct was fatal.

Case CXXXVII.—A lady, aged 60, had been for several years liable to attacks of acute pain in the right hypochondriac region, which generally continued in great severity for a few hours, and then subsided suddenly. On Wednesday, 14th January, 1824, she was seized with pain corresponding to her former attacks, but which did not subside as usual. It continued through the night, accompanied by frequent vomiting and constitutional disturbance. On the 15th, there was fever, with frequent vomiting and obstinate cos-

tiveness, and the pain was more extended,—being referred to a considerable space on the right side of the abdomen. Belly tense and rather tumid. The case had assumed the characters of ileus, and all the usual means were employed with little relief.—16th. There was some discharge from the bowels after a tobacco injection, but it was very scanty. Severe pain continued, with every expression of intense suffering. Her strength sunk, and she died on the morning of the 17th.

Inspection.—Every part of the intestinal canal was perfectly healthy, except the upper part of the duodenum, where there was considerable appearance of inflammation, with remarkable softening, so that it was very easily torn. A large irregular calculus was found sticking in the ductus communis, and the parts were so softened that it came through the side of the duct when it was very slightly handled. In the texture behind the duodenum there was considerable appearance of inflammation. No morbid appearance could be detected in any other organ.

II. Perforation or rupture of the gall bladder, or one of its ducts, and escape of the bile into the peritoneal cavity.

The immediate effect of this accident is rapid peritonitis, fatal in eighteen or twenty-four hours. The symptoms preceding it will depend upon its cause, and consequently may be either very obscure, or such as indicate great distention of the gall bladder, with obstruction of the bile in its passage out of it. The causes of the affection are chiefly referable to two classes.

(1st.) Obstruction of the common duct. This may take place rapidly by adhesive inflammation, or more slowly by gradual obliteration. In the former case the symptoms are rapid, as in a man mentioned by Andral, who had acute pain followed by jaundice, and a pyri-

form swelling rising up from under the margin of the ribs. On the fifth day he was suddenly attacked with peritonitis, and died in twenty-four hours. The ductus communis was found much contracted, and at one place obliterated. The gall bladder and the hepatic and cystic ducts bore marks of having been much distended; the rupture had taken place in the hepatic duct, and much bile was found in the peritoneal cavity. In another, the symptoms of obstruction to the passage of the bile had been going on for between two and three months before the fatal attack, and in this case both the cystic and common ducts were found much contracted.

(2d.) Perforation of the coats of the gall bladder by ulceration. A man mentioned in the Nouveau Journal de Medicine for 1821, had been affected for more than a month with pains in the abdomen and fever, which had various remissions and aggravations. On the 37th day of the disease, he was suddenly seized with symptoms of the most violent peritonitis, and died on the following morning after suffering inexpressible agony. On inspection, there were found marks of most extensive peritonitis. The inner surface of the gall bladder presented numerous small circular ulcers from one to three lines in diameter; two of them had entirely perforated its coats, so as to allow the escape of the bile into the peritoneal cavity.

SECTION IV.

CHANGES IN THE QUALITY AND QUANTITY OF THE BILE.

The chronic diseases of the liver seem to impair the functions of digestion, partly by the actual pressure upon the stomach, when the liver is enlarged or hardened; and partly by morbid changes in the secretion of the bile from that condition which we know to be necessary to healthy digestion. There is a good deal of hypothesis on this subject; but there are certain points, in regard to the changes of the bile, which we may consider as ascertained with some degree of precision.

1st. We can have little doubt that the bile is often deficient in quantity, producing dyspeptic symptoms, with paleness of the stools. This seems to arise chiefly in connection with the pale degeneration of the liver, especially when the organ is much diminished in size; but in some of the extraordinary masses of disease which have been described, shewing almost every point of the liver altered from the healthy structure, there were no symptoms indicating that the bile was either deficient or vitiated,—the motions being healthy, and the digestion little impaired, until a very short time before death. This occurred in a very remarkable manner in Case CXXXIV.

2d. The bile appears to be sometimes much altered in quality. The only means by which we can judge of this with any degree of precision, is from the appearance of the bile which is found in the gall bladder. In some diseases of the liver, accordingly, we find

there a fluid of an albuminous or watery appearance, without any of the sensible qualities of bile. When we observe a change so very remarkable as this, we may conclude that other changes may take place in the quality of the bile, less cognizable to our senses, though they may impair in a great degree the functions of digestion; but this subject is at present involved in much obscurity.

3d. It is probable that the bile may be increased in quantity; but it must at the same time be admitted, that our prevailing notions on the subject are rather hypothetical than founded upon facts. The bile is a viscid fluid of a green colour, and, when it is mixed with the usual contents of the intestinal canal, it imparts to them a bright yellow. When the motions become of a dull white or ash colour, we judge with tolerable precision of the deficiency of bile; but I am not aware of any test by which we can judge with precision of its redundancy; and I must confess my suspicion, that the term bilious stools is often applied, in a very vague manner, to evacuations which merely consist of thin feculent matter mixed with mucus from the intestinal membrane. On this subject I find a late intelligent writer on the diseases of India, expressing himself in the following manner, after alluding to the doctrine of several systematic writers in regard to bilious diarrhœa, arising from increased secretion of bile: "not a single fact is produced by either of these authors in support of their opinion, and it seems to rest merely upon the popular notion that the colour of the feces is derived from the bile; but this doctrine seems rather to be taken for granted than proved."*

* Mr. Tytler.—Calcutta Transactions, vol. iii.

SECTION V.

PATHOLOGY OF JAUNDICE.

Jaundice is produced by the absorption of bile into the circulation, and this is generally connected with some obstruction to its passage from the liver into the duodenum. It must be confessed, however, that there is much obscurity in the pathology of many cases of jaundice, and that some of the causes which have been assigned for it are in a great measure hypothetical. Among these perhaps may be reckoned morbid viscidity of the bile, spasm of the ducts, overflow of bile, and what has been termed bilious congestion. These and some others of the same kind must be perhaps considered rather as hypotheses framed to correspond with the facts than as deductions from them, and therefore not entitled to much confidence.

When, with a view to practical utility, we consider the circumstances under which chiefly jaundice takes place, they seem to be referable to the following heads.

I. The passage of a gall stone. Jaundice takes place from this cause, when the calculus is a considerable time in passing, so as to produce an obstruction of some continuance in the duct; when it passes in a shorter time, though the symptoms may be equally severe, no jaundice follows. The precise period which is necessary for the production of jaundice has not been ascertained; it is probable that it varies in different cases.

This form of the disease is in general distinguished by the violence of the pain, but cases have occurred in which the disease was distinctly referred to this cause,

while the symptoms had been severe vomiting and jaundice, with very little pain. This occurred in a woman, mentioned in the fifth volume of the Medical Repository, who was suddenly seized with jaundice accompanied by vomiting, and died the same night in a state of coma. A calculus was found sticking in the gall duct, and the duct was ruptured. On the other hand, I have described a remarkable case in which a calculus impacted in the common duct was fatal in three days with symptoms of inflammation and ileus, without jaundice.

Several cases are on record in which large calculi, after producing jaundice, and the other symptoms indicative of having been impacted in the duct, have worked their way outwards, and have been extracted from an opening in the parietes. In a case of this kind mentioned by Dr. George Gregory, after the gall-stone was extracted, the ulcer healed up, the jaundice went off, and the patient, who had suffered excessively for several months, rapidly got well. Several cases of the same kind are mentioned by Morgagni and Haller. In one of them, the abscess speedily healed; in another, it continued open, discharging a yellow fluid; in a third, it discharged calculi at intervals.* A case occurred to the late Dr. Graham of Dalkeith, in which a very large calculus was extracted from an abscess in the parietes of the abdomen; and I believe ultimately did well. It has been doubted whether the very large biliary calculi, which are sometimes discharged by the bowels, had really passed through the duct, or whether they had worked their way by a process of ulcerative absorption into the duodenum, or the colon. But I have described a case in which a large calculus produced fatal ileus, after it had passed as far as the middle of the small intestine. The common duct was found so dilated as

* See page 397, for a remarkable case of this kind.

to admit a full-sized finger, but without any other appearance of disease.

It has been disputed whether biliary calculi are ever formed in the substance of the liver, or in the gall-bladder only. But Morgagni mentions several instances in which they were found in the liver, and even of great size; and therefore there is no doubt of another point which has been disputed, namely, that they may produce jaundice by sticking in the hepatic duct. By far the most common formation of them, however, is in the gall-bladder, and here they generally exist in numbers, more or less extensive, so that a patient who has once suffered from a gall-stone is always in danger of suffering in the same manner again. We frequently find thirty or forty of them in the gall-bladder; Morgagni refers to cases in which there were several hundreds, and to one in which there were 3646. They vary exceedingly in size. Hildanus mentions one which weighed eighteen drachms; and I have mentioned one which measured in its longer circumference four inches, and in its smaller three inches and a half.

Biliary calculi seem in general to produce no inconvenience while they lodge in the gall-bladder; but in some cases they appear to produce considerable derangement of the stomach, and of the general health, without entering the duct, and consequently without producing either pain or jaundice. I have mentioned the case of a woman, who died gradually exhausted by daily vomiting, which had continued more than a year, and in whom no morbid appearance could be discovered, except that the gall-bladder was distended with calculi which entirely filled it. A case has also been related to me of a gentleman who was affected with much derangement of his health, accompanied by great and increasing emaciation, for which no cause could be discovered. After the affection had continued for a

year or more, he discharged some large biliary calculi, and speedily recovered perfect health.

The passage of biliary calculi, when they are producing urgent symptoms, can be promoted only by opiates, warm bath, laxatives, and perhaps the tobacco injection. The only means likely to prevent the formation of them are probably regular exercise, and constant attention to the bowels. It is said that a peculiar disposition to the formation of them has been remarked in persons, who, while in good health, have been subjected to much confinement, as in criminals during a long imprisonment.

II. Inflammatory affections of the liver. Jaundice appears to be often connected with an inflammatory condition of the liver, existing in an obscure form, and often of small extent. It may be suspected when the disease is attended with pain or tenderness in the region of the liver, though without fever, or any symptoms of inflammation in an active state. The cases of more decided inflammation of the liver seem to be attended with jaundice only when the inflammation is seated chiefly on or near its concave surface; but in Case CXIX. we have seen very deep jaundice in a case rapidly fatal, in which the only morbid condition was a uniform black colour of the whole surface of the liver, while the internal parts had a healthy appearance. In several cases, on the other hand, we have seen proofs of most extensive inflammation, terminating by suppuration, without jaundice, though in some of the cases nearly the whole substance of the liver seemed to have been involved in the disease. The black degeneration of the liver with remarkable diminution of size, we have seen attended with very deep jaundice in Case CXXIV; while there was no jaundice in connection with the very extensive encephaloid disease in Case CXXV, in which the symptoms were more acute than in the former case.

It appears, however, that there is a state of the liver which gives rise to jaundice, and which does not amount to inflammation, though it is evidently allied to it. The circumstances, under which we are chiefly able to trace this affection, are when jaundice appears in connection with inflammation of the lower part of the right lung. In a case of this kind, which had been accompanied by the usual symptoms of pneumonia, with the addition of violent hiccup, I found an abscess of the lower part of the lung in contact with the diaphragm, but could not detect any appearance of disease in the liver, except that it seemed to be rather paler than usual on the surface. Bonetus relates a similar case in which the disease was in the lungs, the liver being merely paler than natural. There had been fever with convulsions, and death in 15 days. It is probable, therefore, that the liver may be affected, in a manner analogous to that now referred to, from other causes which in a great measure elude our observation. To this principle we may perhaps refer some of those temporary cases of jaundice which appear to arise from disorders of the bowels,—also those cases which seem to be induced simply by external heat, and have been ascribed to overflow of bile. Jaundice is also occasionally observed in connection with disease of the heart, arising probably from the impeded return of the blood from the liver; and it has been known to supervene upon suppression of the hæmorrhoidal discharge and other evacuations which had become habitual. Portal has seen it supervene upon suppression of leucorrhœa; and he also mentions a woman who had been long affected with a copious and very fetid discharge from the arm-pits, and immediately became jaundiced, when she suppressed it by means of a preparation of alum.

When jaundice appears to be connected with any affection of the liver of an inflammatory character, it must of course be treated by the appropriate rem-

edies,—as general or topical blood-letting, blistering, antiphlogistic regimen, and very free and continued purging. When the activity of the symptoms has been subdued by these means, benefit is often obtained from mercurial friction, and I think likewise from friction with Iodine.

III. There can be little doubt of the fact, that jaundice is often produced by affections of the bowels, though the precise manner in which it arises from such causes is not easily ascertained. Large collections of hardened feces in the colon have been supposed to be capable of producing it; and Dr. Marsh has described several cases calculated to shew, that jaundice may arise from an inflammatory state of the mucous membrane of the duodenum, acting directly, by obstructing the mouth of the duct.*

IV. A singular fact in the history of jaundice is afforded by those cases, in which it is distinctly induced by passions of the mind. A woman mentioned by Hoffman was affected with jaundice every time that her mind was agitated; and a medical gentleman, mentioned by Mr. Cooke, became jaundiced almost invariably when he had a dangerous case under his care.† The doctrine of spasm has been applied to such cases; but it is time that we should discard this hypothesis, which is used to explain every thing that we do not understand, and content ourselves with the facts when we can really go no farther.

Jaundice, however, even when arising from causes apparently transient, is never to be looked upon as free from danger. For many cases are on record in which death took place in a very unexpected manner, and in which no morbid appearance could be discovered capa-

* Dublin Hospital Reports, vol. iii.
† Cooke on Derangements of the Digestive Organs.

ble of accounting either for the jaundice, or for the fatal event. Several years ago, I saw a woman who became suddenly jaundiced a day or two after accouchment. There was no other symptom, and no danger apprehended, until after two or three days she became comatose and died. There was very slight effusion in the brain; no morbid appearance could be discovered in any other organ. A young man, mentioned by Morgagni, was seized with jaundice after agitation of mind. It was attended with pain of the stomach and vomiting, but no fever. On the second day, he was dull and forgetful; on the third he was convulsed and then comatose; and he died on the fifth. The liver was found only flaccid and pale; there were some red points on the mucous membrane of the stomach, and turgid glands in the abdomen. In the head there was slight effusion on the surface of the brain, and a considerable quantity about the spinal cord. Another young man, mentioned by the same writer, was very much frightened by having a musket pointed at his breast. Next day he was jaundiced; soon after delirious; then convulsed; and he died in twenty-four hours from the first appearance of the delirium. No disease could be detected, except turgescence of the vessels on the surface of the brain. Dr. Marsh also mentions two cases in which jaundice came on suddenly during the use of mercury, and was fatal with delirium and coma.

In some cases, however, in which jaundice comes on in this manner,—and is suddenly fatal, the chain of events that seem to lead to the fatal result is traced in a more distinct manner, as in a lady mentioned by Portal, whose case was formerly referred to. After great agitation of mind, she was seized with suppression of the menses; this was speedily followed by very deep jaundice; and she died next day. The liver in this case shewed marks of extensive disorganization.

V. The cases of long continued jaundice are generally referable to two heads, namely, chronic disease of the liver, or tumors, or other diseases of neighbouring organs, compressing the duct. Of the former class, we have seen various examples under the head of diseases of the liver; and we have also seen, on the other hand, chronic disease of the liver of most extraordinary extent, without any appearance of jaundice. Among causes of the second class, are enlargements of the spleen and pancreas; masses of disease attached to the pylorus; thickening and induration of the coats of the duodenum, and tumors of various characters compressing the common duct. There is also reason to believe that old cases of jaundice are sometimes produced by contraction of the calibre of the common duct, arising from chronic inflammation of the coats.

In this outline, I have alluded only to those sources of jaundice which may be considered as ascertained with some degree of correctness. Others are mentioned, but are probably in a great measure conjectural; and I am not entirely satisfied of the correctness of the doctrine by which jaundice has been considered as an effect of injuries of the head. The source of hesitation here is a doubt, whether, in the cases referred to, the injury of the head could be considered as the cause of the jaundice, or the liver had not also received an injury at the time of the accident.

The yellow tinge in jaundice is said to have been observed in all the fluids of the body, except the milk. But Dr. Marsh mentions, that, in examining the body of a woman who died in the Lock Hospital of Dublin from protracted disease, connected with jaundice, the mammæ appeared full; and by moderate pressure, there were obtained from them several ounces of a yellow tenacious fluid, having all the visible properties of pure bile. He also mentions a case related to him by Dr.

Cheyne, of a lady affected with jaundice, whose linen was distinctly tinged by the exhalation from her skin.

Case referred to in page 390.

Since this sheet was sent to press, I have seen, along with Mr. Lizars, a man about 50, who has had a biliary fistula discharging for nearly three years. The complaint began with pain in the region of the liver, accompanied by vomiting and jaundice. After these symptoms had continued about three weeks, a tumor formed in the region of the gall bladder, which was opened, and discharged much fluid of a mixed green and yellow colour, and some small biliary calculi. This opening closed, but another soon took place, which has continued to discharge ever since. The discharge varies in quantity, but is often so profuse as in a very short time to wet his clothes as far as his knee, and in the night to soak through his bed to a great extent. Mr. Lizars at one time collected, in the course of a visit not exceeding fifteen or twenty minutes, about four ounces of a fluid, which on chemical examination exhibited all the properties of pure bile. The man has every appearance of good health, and, except the fistulous opening, there is no appearance of disease in the region of the liver. His appetite and digestion are good, his bowels are regular, and the evacuations of a natural appearance.

PATHOLOGY

OF

THE SPLEEN.

The morbid conditions to which the spleen is liable appear to be chiefly the following:

§ I.—Inflammation.

Inflammation may be seated either in the substance or the peritoneal coat of the spleen. Active inflammation of the substance of the spleen is rarely observed; but Portal found proofs of its existence, in a man who died of acute fever, with pain in the left side, cough, dyspnœa, and violent palpitation of the heart. The lungs were sound, but there was inflammation of the spleen and the left side of the diaphragm. In other cases, vomiting has occurred. It is probable that the symptoms are in general more acute, when

the inflammation is seated in the peritoneal coat, than when it is in the substance of the spleen. I have not seen this affection in the idiopathic form; but I have repeatedly seen the spleen completely enveloped in a thick and dense covering of false membrane, in connection with peritonitis, without any disease of its substance. Inflammatory action of the spleen seems to occur more frequently in a chronic form, and to terminate in some cases by suppuration, in others by a peculiar black degeneration or softening. In both cases, the disease is generally protracted, and the symptoms are often exceedingly obscure.

§ II.—Suppuration of the spleen.

The following is the only case of suppuration of the spleen that has occurred to me.

Case CXXXVIII.—A gentleman, aged 52, who had enjoyed previously very good health, was affected in January, 1821, with cough and slight feverishness like a common cold. After a short confinement, the cough disappeared, and he felt otherwise much better; but after some time, he was confined again, though without any defined complaint except weakness. When closely questioned, he sometimes mentioned an undefined uneasiness across the epigastric region, but it was slight and transient; his appetite was variable and capricious, but, upon the whole, not bad, and he had no dyspeptic symptom; his bowels were rather slow, but easily kept open; his breathing was natural; and every other function was in a healthy state, except that his pulse continued a little frequent, and that he was becoming progressively more weak and emaciated. In

this manner, the complaint went on during the remainder of the winter; in the beginning of summer he went to the country, where he made no improvement.

He was now greatly reduced in flesh and strength; his pulse was from 96 to 100 and weak; his nights were generally good, but sometimes feverish; his appetite was bad, but he still took a good deal of nourishment, and never complained of his stomach; there was no cough and no pain; the urinary secretion and bowels were natural; but the debility and emaciation continued to increase progressively. On the 2d of July, he was seized with diarrhœa, and died on the 5th. Before the attack of diarrhœa, there had been little change for several weeks; he had been able to be out of bed the greater part of the day, and occasionally out in a carriage or in a garden chair.

Inspection.—The spleen was somewhat enlarged, and in the centre of it there was an irregular cavity containing several ounces of purulent matter; the surrounding substance was soft and easily lacerated. The liver was pale, but otherwise healthy; the kidneys were pale, with a peculiar degeneration of some parts of them into a firm white matter. After the most careful examination, no appearance of disease could be detected in any other part of the body.

From the commencement of his illness, this gentleman was under the care of Mr. William Wood, and in the progress of it he was occasionally seen by Dr. Thompson and myself; but we never could detect a symptom from which we could infer what was the seat of his disease.

There are few cases on record of suppuration of the spleen, and the symptoms in general appear to be protracted and often obscure. A young man, mentioned by M. Jacquinelle, (Journal de Med. tom. 88,) had pain and fulness in the left hypochondrium, with palpi-

tation of the heart, faintings, and progressive emaciation; and he died gradually exhausted, at the end of a year. A short time before his death, there was a cessation of pain, followed by discharge of very fetid and dark coloured matter by stool. The heart was found enlarged, with dilatation of the aorta. The spleen was much enlarged, and contained an abscess which had burst into the colon. A similar case is mentioned by Grotanelli; and another, in which the abscess burst into the cavity of the abdomen, and was fatal in three days. A man mentioned by the same writer, after various attacks of ague, had tumified spleen with hectic paroxysms and night sweats. In a quarrel, he received a blow on the left side, after which the tumor subsided, and he discharged much thick and fetid matter in his urine. This continued about three weeks; he then recovered good health, and had continued well for seven years, when the account was published. In a woman mentioned by Heide, who had long been affected with a swelling in the left hypochondrium, a tumor formed at the umbilicus which discharged purulent matter; after it had discharged for a month she died hectic. A cavernous ulcer was found extending from the umbilicus, betwixt the peritoneum and the abdominal muscles, and forming a communication with an abscess of the spleen.*

Abscess of the spleen may likewise burst into the stomach, as in a very interesting case mentioned by M. Coze.† The patient had pain in the epigastric region with a remarkable feeling of pulsation at the stomach, which was increased by exercise, and by any excess in diet; he had occasional vomiting, and slight uneasiness in breathing, was easily fatigued by exercise, and a sense of suffocation was induced by any exertion. On examination nothing could be dis-

* Heide Centuria Observ. Med.—Obs. xiii.
† Jour. de Med.—Tom. 82.

covered but a slight tension across the epigastrium, and little change took place for ten or twelve months, except that his skin became slightly yellow. He was then seized with vomiting of blood mixed with purulent matter, after which the pulsation at the stomach subsided, and he felt easier than he had done for a long period. But the vomiting returned in a fortnight, and he died in the third attack, after another week. The spleen adhered intimately to the stomach, and formed a bag full of purulent matter and clots of blood. The parietes of it were in general about six lines in thickness; and it communicated, by a free opening, with the cavity of the stomach at the place of the adhesion.

In some cases, the abscess of the spleen appears to have obtained a most remarkable size. In a case mentioned in the Memoirs of the Academy of Sciences, it contained 30 lbs. of matter. In another case mentioned in the same work by M. L'Hermite, 8 lbs. of matter were drawn off by tapping. The patient died next day, and the spleen was found still to contain 7 lbs. of matter, and to form a sac eighteen inches long and twelve inches in diameter. In some of the soldiers who suffered from the Walcheren fever, Mr. Wardrope found the spleen entirely reduced to a cyst full of puriform fluid.*

§ III.—Ramollissement or black degeneration of the spleen.

This I believe to be the result of a low degree of inflammatory action; and it is found as the only morbid appearance, in cases in which the patients have died with obscure and protracted symptoms. The spleen so affected may be enlarged, or it may be of the natural

* Notes to his edition of the works of Dr. Baillie.

size ; but the whole substance of it is reduced to a soft black broken-down mass like grumous blood, in some cases still softer, being of a pultaceous consistence, or nearly fluid.

The following examples will illustrate the sort of case in which this affection occurs as the only morbid appearance.

Case CXXXIX.—A lady, aged 60, had been for several months affected with loss of appetite, dyspeptic symptoms, and occasional vomiting. I attended her for about a month before her death, during which she had much nausea, and generally vomited three or four times a-day ; she had little or no appetite ; tongue loaded ; bowels rather costive, but easily regulated ; pulse natural. She did not complain of any pain, and nothing could be felt on pressure that could account for the disorder. She died, gradually exhausted, without any other change in the symptoms.

Inspection.—No morbid appearance could be discovered after the most careful examination, except in the spleen, which was of a very dark colour, and the whole substance of it was broken down into a soft mass like grumous blood.

Case CXL.—A gentleman, aged, about 45, consulted me in summer, 1827, on account of a deep-seated painful swelling in the left side. On examination, it was found to be exactly in the region of the spleen ; it was well defined, and very painful ; and no cause could be assigned for it. His general health was considerably impaired ; and the functions of the stomach were a good deal deranged. After a variety of treatment, he regained pretty good general health ; and the swelling was very much reduced. I then lost sight of him for a year, during which I learnt that he enjoyed pretty good health, though he occasionally felt uneasiness in his

side. He died in August 1828, after an illness of about three weeks, which had the characters of continued fever. I did not see him in this illness, but was present at the exmination of the body.

Inspection.—The spleen was very much enlarged, probably to at least ten or twelve times its natural size. When first taken out, it had a remarkably soft and fluctuating appearance, as if its peritoneal coat contained a large quantity of fluid. But on cutting into it, this appearance was found to be owing to its whole substance being reduced to a soft black mass, like grumous blood. The liver was of a remarkably dark green colour, but without disease of its texture.

The condition of the spleen here referred to has been taken notice of by various writers; some of them compare it to a bag of very fetid pitch, others to the lees of oil; some call it putrefaction, and others gangrene; and upon the whole, there seems every reason for concluding it to be an affection which may be fatal without any other disease. A lady, mentioned in Dr. Johnson's Journal, vol. iii., died at the end of a fortnight, without any other symptoms than nausea and frequent vomiting; the pulse and bowels being quite natural. On inspection, there was found some slight appearance of inflammation on the lower intestines; the spleen was very soft, and broken down into a mass like coagulated blood. A man, mentioned by Sennertus, had been affected for some weeks with loss of appetite and pain in the left side; he was then seized with discharge of blood by stool, and died in fifteen days. The pancreas was found slightly diseased; but the principal morbid appearance was in the spleen, which was entirely reduced to a bag full of a matter like the lees of oil, and somewhat fetid;—no part of the natural substance remaining. In other cases, there has been more acute pain, referred to the region of the

spleen ; and in some, it has been found combined with evident marks of inflammation in the neighbouring parts. This occurred in a case by Lossius ; and, in two cases by Crendal, it was found connected with extensive peripneumony. I have likewise observed it in several cases in which there had been extensive inflammation of the lower part of the left.

§ IV.—Simple enlargement of the spleen.

When simple enlargement of the spleen is seen at an early period, it is accompanied with a state of highly increased vascularity. In the older cases, the structure is sometimes of a bluish purple colour, and breaking down under slight pressure ; in others it is hardened, though of the natural appearance ; and sometimes the spleen has been found of an enormous size, without appearing to deviate in any degree from the healthy structure. This occurred in a case mentioned in the Medical Commentaries, in which it weighed 11 lbs. 13 ounces. In other cases, again, the disease presents a mixed character, resembling some of the chronic affections of the liver ;—some parts presenting a tolerably healthy appearance, others being indurated, approaching to scirrhus ; and perhaps there may be hydatids or cysts containing a thick matter like pus or softened tubercles.

One of the most singular facts in the pathology of the spleen, is the very rapid manner in which enlargement of it takes place, and the equally rapid manner in which it subsides. Some of the cases of this kind which I have seen, appeared so very extraordinary, that I suspected some fallacy, until I found similar cases described

as of frequent occurrence by writers on the disease of India. Several years ago, I saw, along with Dr. Combe of Leith, a seaman who had contracted ague in England a few weeks before, and had returned to Leith with the disease going on in the usual manner. In the left hypochondrium, there was a firm defined tumour arising from beneath the margin of the ribs, and projecting downwards several inches. We agreed that our first object was to arrest the fever by the usual means, leaving this remarkable tumor for future consideration; but, on returning about a week after, I found that the fever had been easily arrested, and that the tumor was entirely gone.

The simple enlargement of the spleen occurs chiefly as the result of intermittent and remittent fevers; but it is also said to occur from other causes, as in young women in connection with suppression of the menses, and in persons more advanced in life from the suppression of long continued hæmorrhoidal discharges. It is also met with, especially in warm climates, in feeble unhealthy children, and seems to be produced by damp situations and bad nourishment. Patients affected with tumid spleen are generally of a sallow and unhealthy aspect; the bowels irregular; the motions generally dark coloured. They are said to be liable to hæmorrhage from various parts of the body; there is deranged digestion, with muscular debility; and often a general unhealthy state of the system, with a tendency to sloughing sores from slight causes. There is frequently a dry cough; and in protracted cases, hæmatemesis, and at last general dropsy. In other cases, the disease seems to have wonderfully little effect upon the general health. Dr. Crane mentions that he has known individuals in Lincolnshire affected with it for twenty years, though they had generally a pale or yellowish as-

pect ;* and Lieutaud mentions a spleen which weighed 32 lbs. in a woman who had had the disease in a greater or less degree for seventeen years.

It is now generally admitted, that, in the treatment of enlarged spleen, mercury is uniformly and highly injurious, producing mortification of the mouth, and rapid failure of strength. In the earlier stages, when there is any considerable degree of tenderness, repeated topical bleeding should be employed, followed by blistering or a seton. In other respects, the chief reliance of those who have seen most of the disease, appears to be upon free and continued purging, and especially purgatives combined with tonics. The spleen powder, and spleen mixture of Bengal, are combinations of rhubarb, jalap, scammony, and cream of tartar, with colombo powder and sulphate of iron, taken three times a-day, in such doses as to keep up regular but moderate purging. About 20 days are stated by Mr. Twining,† as the period which is generally required for reducing by this treatment a very considerable tumefaction of the spleen, if the case has been recent. Others employ nitric acid, with regular aloetic purges. The natives of India employ the actual cautery, and a combination of aloes, garlic, and vinegar. They also employ aloes, combined with the sulphate of iron. It is probable that the external application of Iodine might be useful.

* Dr. Crane, Edin. Med. Jour. April, 1823
† Calcutta Transactions vol. iii.

§ V.—Tubercles.

Tubercles are of very frequent occurrence in the spleen,—generally in combination with tubercular disease in other parts of the body; and it may be seen completely studded with them, even in the bodies of infants a few months old. In these cases, they are generally very small and in the solid state; but in more advanced life, they may attain a very considerable size, and by suppurating pass into numerous small abscesses. A woman, mentioned by Grotanelli, had nausea, bad appetite, occasional vomiting, some cough, and pain in the left side; she lost her colour, and the abdomen became tumid. The vomiting increased, with a quick pulse and anasarca; and she died in five months. Considerable effusion was found in the abdomen; the spleen was enlarged and contained twenty tubercles full of thick purulent matter.

§ VI.—Pale induration of the spleen approaching to scirrhus.

This appearance I have not seen, but it is mentioned by Portal and Lieutaud. An indurated friable state of the spleen is also mentioned as occurring in India, in which it breaks down, when handled, like a piece of old cheese. A black induration with great enlargement is mentioned by Diemerbroeck.

§ VII.—Hydatids.

Hydatids are of frequent occurrence in the spleen;

they may be imbedded in its substance, but I think are more commonly met with in cysts formed by its peritoneal coat. In one case of this kind, in which there was an immense swelling in the region of the spleen, I found the disease to consist entirely of a bag of hydatids covered by its peritoneal coat, the substance of the spleen being little altered from the natural appearance.

§ VIII.—Hæmorrhage from the spleen, and laceration by external violence.

A man, mentioned by Fournier, had suffered from quartan ague for several months, but was considered as convalescent, when he died suddenly after a hearty supper. The spleen was found enlarged and ruptured; and there was much coagulated blood in the cavity of the abdomen.

Several cases are on record of laceration of the spleen by external violence; in some of them, death seems to have taken place from hæmorrhage, in others from inflammation. Cases of the former kind are mentioned by Lieutaud and Tulpius. A man, mentioned by Dr. Chisholm, fell while carrying a burden, and struck his left side against a stone. He felt little uneasiness at the time, and next day was able for his work as a blacksmith; but he was then seized with pain in the side, fever, delirium and muscular spasms, and died on the fourth day from the injury. All the viscera were found in a healthy state, except the spleen, which was somewhat enlarged, and, on the anterior surface of it, there was a laceration through its whole extent to the depth of two inches; the edges of the laceration were in some places florid, in others sphacelated.

Various other morbid conditions of the spleen are occasionally met with, but they are distinguished by no particular symptoms; consequently it would answer no purpose to detail examples of them. Among these may be reckoned infiltration of the substance of the spleen with a gelatinous fluid; deposition of fatty matter throughout its structure; ossification or cartilaginous hardness of its external surface; remarkable diminution of its bulk; stony concretions, and a stony induration of its whole structure. A woman, whose case is quoted from the Swedish Transactions, in Dr. Johnson's Journal for 1828, had, after exposure to cold, suppression of the menses, pain and swelling in the epigastric region, and hæmorrhage from all the natural outlets of the body. When this had ceased, the spleen was found to be enlarged; she had then effusion in the abdomen and return of the hæmorrhage, to such an extent as to be fatal;—the dates are not mentioned. The spleen was found of enormous size, and its substance was transformed into a grumous glutinous fluid, enveloping three bony concretions, one of which was two inches and a half in length. The liver was found in a state of atrophy.

PATHOLOGY

OF

THE PANCREAS.

Facts are wanting upon this subject ; but it appears that the morbid conditions to which the pancreas is liable, are chiefly the following :

I. Inflammation and its consequences.

Inflammation of the pancreas seems to be rather a rare disease ; but several cases are on record in which it was found suppurated and gangrenous. The symptoms do not appear to be very distinctly defined. There was in general pain, which was chiefly referred to the back, while in others, it had more the appearance of colic ; vomiting occurred in a few of the cases, but does not appear to have been a uniform symptom. Dr. Baillie found an abscess of the pancreas in a young man who had a good deal of pain in different parts of the abdomen, with spasms of the abdominal muscles, but did not complain of any fixed pain in the region of the pancreas ; there was sickness with distention of the stomach, especially after eating, and a tendency to diarrhœa, and at length he became dropsical. A gentleman mentioned by Dr. Percival, had jaundice and bilious vomiting ; a tumor appeared at the epigastrium ; his strength failed ; blood and fetid pus were discharged by stool ; and he died exhausted in three months. The pancreas was found greatly en-

larged, and contained a considerable abscess; the ductus communis was obliterated by the pressure. Portal found a complete suppuration of the pancreas in a man who died suddenly after two or three attacks of vomiting, followed by syncope; he had previously suffered from a paroxysm of gout, from which he was supposed to be convalescent. Abscess of the pancreas is also mentioned by Tulpius and Bartholinus. In two cases by the former, it was connected with quartan fever; and in a case of continued fever, in which there was much pain of the back, Guido Patin found an immense abscess occupying the whole of the pancreas. A sphacelated state of the pancreas was found as the only morbid appearance by Barbette, in a man who died of urgent vomiting after a short illness. The same appearance occurred in a man mentioned by Greizel, who had been liable to colic pains, and died rather suddenly, having complained only of a feeling of internal coldness; and Portal found the pancreas softened and gangrenous in a man who died of obscure pain in the abdomen, accompanied by wasting, with occasional nausea and diarrhœa.

II.—Enlargement, with a mixed state of disease, partly consisting of induration, and partly of a softened state, resembling the medullary sarcoma.

Case CXLI.—A man, aged 56, had pain in the left hypochondrium, extending into the back, with oppression at the stomach, indigestion, and gradual emaciation; and he died gradually exhausted after two years, without any other symptom, except that for a week or two before his death, there was a considerable degree of jaundice. He never had any vomiting, and his bow-

els were easily regulated. No disease could be discovered on examination during life, even after he became to the last degree emaciated.

Inspection.—The stomach and the intestines were healthy; behind the stomach, in the seat of the pancreas, there was a morbid mass four or five inches in breadth, and somewhat less in thickness; it was closely attached to the spine, and surrounded the aorta. It varied in its structure, some parts being of almost cartilaginous hardness, others soft and composed of alternate layers of yellowish and white matter. The liver was somewhat enlarged and soft; the other organs were healthy.

Case CXLII.—A young man, aged 16, in May, 1812, began to complain of pain in the region of the stomach, extending through to the back. It increased very gradually, but without confining him from his usual employment, until July, when he began to be affected with vomiting, which generally occurred two or three hours after dinner. At this time, he commonly retained his breakfast; but, in September, when I saw him, he vomited every thing. He was then much wasted; and a large irregular tumor was distinctly felt in the epigastrium, which was painful on pressure. He died, gradually exhausted, in the end of December; for 8 or 10 days before his death, the vomiting had ceased, and he was then affected with severe diarrhœa.

Inspection.—The pancreas was enlarged, so as to form a mass seven or eight inches long, five inches broad and three in thickness; and internally shewing a mixed state of disease as in the former case. The stomach, the duodenum, and the arch of the colon, had formed adhesions to the mass; and the stomach seemed somewhat thickened in its coats; the other viscera were healthy.

which occurred in the examples now described, and nearly in the following proportion. Of twenty-seven cases which I find mentioned by various writers, six were fatal with gradual wasting and obscure dyspeptic complaints, without any urgent symptom. In eight, there was frequent vomiting, with more or less pain in the epigastric region; and thirteen were fatal, with long continued pain without vomiting. In some of these, the pain extended to the back; and in others, it was much increased by taking food. In several, there were dropsical symptoms; and in three or four there was jaundice from the tumor compressing the biliary ducts. In the morbid appearances, also, there was great variety; the pancreas being in some of the cases much enlarged, in others, in a state of scirrhous hardness with very little enlargement. It does not appear that any distinct relation can be traced betwixt the urgency of the symptoms and the degree of enlargement; for this existed in a great degree in some of the cases in which the symptoms were slight and obscure; and there was hardness with little or no enlargement in others, in which the symptoms were defined and violent.

IV.—Calculous concretions.

De Graaf found seven or eight calculi, of the size of small peas, in the pancreas of a man who had been long liable to vomiting and diarrhœa, and died, gradually exhausted, at the age of thirty. Portal found the pancreas much enlarged and containing twelve calculi, some of them the size of nuts, in a man who died of disease of the aorta. In a case mentioned by Dr. Baillie, the calculi were about the size of the kernel of a hazel nut, with a very irregular surface, and were found to be composed of carbonate of lime.

FINIS